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PATTERNS OF PRICING BEHAVIOR IN THE PENNSYLVANIA PHYSICIAN SERVICES MARKET

Pennsylvania
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I. INTRODUCTION

This report presents interim findings from a study of pricing practices in the market for physicians' services in Pennsylvania. The overall project, of which this work is but a part, seeks to develop improved knowledge and insight into the behavior of physicians in the pricing of their services, including an exploration of the relationship of physicians' fees to individual physician characteristics and to characteristics of their practices and practice locales. The studies in this project series emphasize use of source data from files of claims paid by Pennsylvania Blue Shield (PBS) both as a Medicare Part B carrier and as a major provider of private health insurance throughout the state of Pennsylvania.

A. SCOPE AND OBJECTIVES

The primary purpose of this phase of the project work is to detect, describe, and summarize patterns of variation observed in Pennsylvania physicians' fees. The descriptive results reported here may serve to suggest further generalizations, conjectures, or insights concerning physicians' pricing practices.

Methodologically, the primary emphasis is upon measures of central tendency and dispersion in the distributions of physicians' fees for selected specific procedures and services performed by physicians. Starting with data developed at the level of the individual physician, empirical patterns of pricing behavior are explored for: (a) the overall

physician population in the state; (b) cohorts of physicians organized according to broad specialty classes; and (c) cohorts of physicians organized by geographic areas which might be viewed as loose approximations of macro-scale market areas within the state.

The question of price discrimination by physicians is of particular interest in this investigation. At the individual physician level, this very simply seeks to determine whether there is demonstrable evidence that individual physicians charge different prices to different patients, or to different classes of patients, for the same services. At the population (or cohort) level, it seeks to detect evidence of the extent to which there are characteristic price differences between physicians, or between groups of physicians, for essentially the same services. These questions are addressed in a general and inferential sense through interpretation of statistical measures of dispersion in the fee data distributions.

The objectives of the project phase covered by this report may be summarized as follows:

(1) To determine and display characteristic relative price levels for each of several selected representative procedures performed by physicians;

(2) To detect evidence of possible price discrimination for specific procedures at the individual physician level;

(3) To obtain some measure of the relative homogeneity or disparity between different physicians in their characteristic pricing practices for essentially the same services;

(4) To obtain quantitative measures of differences in prices charged to Medicare beneficiaries and to Blue Shield subscribers for (nominally) the same services;

(5) To examine within-group and between-group variations in pricing practices by broad specialty groups, for selected specific procedures;

(6) To examine differences (or similarities) in physicians' pricing practices by geographic area.

B. SUMMARY OF FINDINGS

In general, the results of this phase of study reveal substantial variation in fees charged for most procedures. The variation is in some ways systematic, and in some ways haphazard. The findings reflect the already well known fact that specialists charge more for their services than generalists. The extent of the specialist fee differential varies, however, for different kinds of services. Moreover, although there always is at least one specialty group having higher average fees than generalists for any given procedure, the generalist group is not always the absolutely lowest in fee. There are some procedures for which the generalist group ranks in the middle.

There is clear evidence of differences in price between the Medicare and Blue Shield programs. The differences frequently are very slight and are not entirely consistent, however. Medicare tends to get slightly lower prices for diagnostic medical and pathology services; but the results are mixed for other types of services, with Medicare prices

sometimes higher and sometimes lower than those for Blue Shield.

For most procedures, there is scant evidence of significant price discrimination at the individual physician level, particularly in the Blue Shield program. On the other hand, the summary statistics for many of the procedures reflect somewhat greater dispersion of fees at the individual physician level in the Medicare data than in the Blue Shield data. These results suggest that while there is relatively little discrimination in either program at this level, there is a slightly greater tendency toward at least a modest amount of price discrimination with Medicare beneficiaries than with Blue Shield patients.

As may be expected, there is fairly extensive fee variation between physicians; but for most procedures this variation does not appear to be excessively great. Agreement between physicians on fee levels appears to be relatively higher for anesthesia services, for most definitive surgical procedures, and for some radiology. The least agreement is exhibited for hospital visits, for diagnostic surgical procedures commonly performed in the office setting, and for some pathology services. As would be expected, the level of agreement for many, but not all, procedures is higher when controlling for specialty group.

Also as expected, prices for physicians' services tend to be highest in the Philadelphia urban area. Contrary to expectation, however, prices in the Pittsburgh urbanized area tend on the whole to be relatively moderate. Rural areas are not always the lowest in price.

C. OUTLINE OF REPORT

Detailed findings are reported in several extensive tables and accompanying narrative in Sections IV through VII in this report. Section IV presents aggregate results for the statewide sample of all physicians included in the study. Sections V and VI examine findings within and between specialty groups, respectively. Section VII presents results by geographic area. First, however, Section II describes and discusses the study data base; and Section III presents a general discussion of the statistical measures used in relation to study objectives.

Other and more detailed considerations will be pursued in separate reports to be published later in this project series. Work to be reported in later publications will include characterization of each individual physician's aggregate pricing level through a single-valued cross-sectional price relative, and will study empirically observed pricing behavior in relation to possible explanatory factors.

II. DATA BASE

Data resources used for this study were derived principally from computer files created as a by-product of PBS claims administration operations under the Medicare Part B and private Blue Shield programs in Pennsylvania. In the course of day-to-day claims processing and payment, a number of pertinent data items for each claim are captured and retained in claims transaction history files. For each claim transaction, these file records identify the doctor, the patient, the exact service performed, the date of service, amount billed, amount allowed for payment, date of payment, and other related items incidental to the handling of the claim. Separate claims experience files are created and maintained for Medicare Part B and for Blue Shield private business.

A. GENERAL DESCRIPTION OF STUDY DATA BASE

This study focuses upon forty-four specific commonly performed physician procedures. Specific procedures included as study topics were selected on the basis of being generally well known (i.e., familiar to most people), unambiguously defined, and occuring with sufficient frequency to assure statistically adequate sample sizes. In addition, the topic procedures were selected to provide a reasonably representative cross-sectional mix of the various types of services performed by physicians. Complete terminologies for each of the selected procedures are listed below, organized by major generic type of service:

General Medical Services and Visits --

- Brief office visit
- Intermediate office visit
- Intermediate home visit
- Initial hospital visit with comprehensive history and physical examination
- Brief hospital visit
- Intermediate hospital visit
- Comprehensive consultation

Surgical Procedures --

- Excision of breast cyst, unilateral
- Arthrocentesis, major joint
- Colles fracture, closed manipulative reduction
- Tonsillectomy, child
- Tonsillectomy, adult
- Appendectomy
- Proctosigmoidoscopy
- Cholecystectomy
- Herniorrhaphy, inguinal, unilateral
- Transurethral resection (TUR) of prostate
- Dilation and curettage (D&C)
- Hysterectomy, total, abdominal
- Laminotomy for herniated intervertebral disc, unilateral, lumbar
- Excision of lens, unilateral, for cateract,

dislocated lens, etc.

Obstetrics --

- Obstetrical delivery, vaginal, including antepartum and postpartum care

Anesthesia Services --

- for excision of breast cyst
- for tonsillectomy, child
- for tonsillectomy, adult
- for appendectomy
- for cholecystectomy
- for herniorrhaphy
- for TUR prostate
- for D&C
- for hysterectomy
- for laminotomy
- for excision of lens

Diagnostic Radiology --

- X-ray, chest, PA and lateral
- X-ray, knee, 3 or 4 views
- Upper gastrointestinal (UGI) study
- Colon, single procedure, routine barium enema
- Cholecystography

Diagnostic Medical Services --

- Electrocardiogram (EKG) with interpretation and report
- Electroencephalogram (EEG)

Pathology ---

- Urinalysis
- Cholesterol blood
- Fasting blood sugar (FBS)
- Complete blood count (CBC)

Claims records for services indicating any of the above procedures were selected from the PBS paid claims history files for calendar year 1975 for both Medicare Part B and private Blue Shield. Further, to assure at least a minimal degree of statistical validity, claims experience for any one of the selected procedures was taken only for physicians who reported (claimed) at least ten services for the given procedure during the year. Thus the basic structure of the study data base reflects specific individual physician-procedure pairs. Each record in the basic file represents a unit transaction between an individual physician and patient, involving delivery of a specified procedure from among the forty-four topic procedures, for an indicated price. Information also was added to the file to indicate each individual physician's specialty and location of practice (county). In addition, summary records were created showing for each physician-procedure pair the mean, median, mode, maximum, standard deviation, skewness, kurtosis, and coefficient of variation of

the given physician's distribution of billed charges for the given procedure.

The abstracted claims experience file selected and developed in this manner contained pricing and related data on 11,322 individual physicians, with 10,347 represented in the Medicare component of the data base and 8,037 represented in the Blue Shield component. The excluded physicians are by definition low volume providers (in the lines of business covered by PBS), and very little was lost by their exclusion.

Although the data base contains information on only forty-four procedures out of approximately 5,000 listed in the overall PBS procedure terminology system, the selected procedures tend to be high volume procedures. The great majority of the approximately 5,000 procedures in the PBS terminology system are rarely, if ever, reported. Consequently, the selected procedures, although relatively very small in number, still represent nearly 40 percent of all services for all procedures in PBS private Blue Shield business, and more than half of all services for all procedures reported to PBS under Medicare Part B in 1975. In total, the data base developed for this study contains close to six million individual transaction records.

Finally, it should be noted that anesthesia procedures are represented in the data base in two different ways. They are represented first on an "episode" basis, in which the base unit for all statistical calculations is a single complete visit to the operating room involving application of anesthesia. Anesthesia services, however, are billed and reimbursed on a relative value unit basis. In this system, the billing and reimbursement are determined by a base value which depends upon the

specific surgical procedure for which anesthesia is being applied, plus additional value units representing time spent in the operating room and potentially complicating circumstances, such as age or debilitated physical condition of the patient. Since the episode basis for calculating price statistics may largely be reflecting differences in time and clinical circumstances from case to case, the price statistics and statistical characteristics for anesthesia services also are calculated on a "unit of service" basis. The service unit basis should more accurately represent real differences in pricing from physician to physician.

B. DATA QUALITY CONTROL

Claims data bases characteristically contain spurious and invalid data in sufficient quantities to induce undesirable and unpredictable inaccuracies in the calculation of parametric statistics (e.g., population means and measures of dispersion) for distributions of price data represented in the files. In a project of this nature, on the other hand, where the primary emphasis is upon descriptive statistics for price data distributions, it clearly is important that the price data in the basic source reference files be valid and correct to the greatest extent possible. Stringent data quality control procedures were employed in an effort to minimize and, to the extent possible, eliminate data quality problems from the final project data base.

The first stage of this effort was an assessment of potential data quality problems in the basic source files to be used for the study. To accomplish this, claims records associated with the tails of the price

data distributions were identified and isolated, on the assumption that this is where the greatest proportion of incorrect or questionable data would be found. Certainly, at least, this is where spurious and invalid data do the most harm. This investigation entailed segregating and developing computer-generated detail listings of claim transaction records indicating unusually high or unusually low physician fees for the service indicated. Examination of a sample of original hard copy claims associated with these records revealed a significant number of claims records in the computer system that incorrectly represented their source transactions. Specific problems encountered included miscoded information (e.g., wrong procedure code), data entry errors (e.g., transpositions, or data entered in the wrong character fields), inclusion of records with action codes indicating some irregularity in the handling and/or disposition of the original claim, supplemental payments related to an earlier claim appearing as a new claim, and others.

Further research then was conducted to identify and develop appropriate data edits and screens that could be applied by computer in order to efficiently and expeditiously assure a satisfactory degree of data quality control. These analyses included consideration of possible variations in definitional content for each procedure, characteristics and conditions of clinical usage, associated price data distributions and characteristics, and applicable guidelines and practices employed in claims administration. The resulting edit routines removed anomalous data arising from errors in coding and data entry by screening out records for claims with places of treatment, physician specialty codes, service quantities, or billed charge levels that would be inconsistent with the

specific procedure indicated. In addition, records including action codes entered in conjunction with the claims processing and payment operation were screened out of the data base. Action codes are used in claims processing to identify atypical claims -- for which it may be reasonable to assume that the pricing indicated on the claim record also could be atypical.

In the application of these edit routines, 123,249 services were screened out of the initial data base of private Blue Shield claims experience, and 335,031 services were screened out of the initial Medicare claims experience base extracted from these studies. The deleted volumes represent 7.3 percent of the services in the initially extracted Blue Shield base, and 5.9 percent of the initially extracted Medicare base.

The data screens and edit routines evidently were effective in accomplishing their objectives. Extremely high and extremely low values disappeared from the physician price data distributions. A random sampling of the eliminated records and services confirmed that they were almost uniformly faulty and invalid.

In sum, it can be concluded that overall data base quality was greatly improved by the application of these data screens and edits. The remaining post-edit data base can be accepted as consisting of predominately good and valid data. It also can be reasonably assumed that very little good data was lost while purging the bad data.

C. DATA STRATIFICATIONS

Physician price data for this study were stratified in three different ways: (1) by program (Blue Shield or Medicare); (2) by physician specialty group; and (3) by geographic area of practice location.

The stratification into Blue Shield and Medicare components followed naturally from the independent development and maintenance of two separate, but parallel, data base components for the two programs.

It is generally perceived and understood that specialty status is one of the factors influencing a physician's pricing decisions, while also influencing patients' decisions on the prices they are willing to pay or expect to pay. For this reason, it is important to be able to control for specialty in an investigation of physicians' prices. The 11,322 physicians represented in the study base are in 29 different specialties. For several practical reasons -- including convenience, efficiency and economy in computation and analysis, and ease of communicating findings --- these are consolidated into five broad categories for purposes of this investigation. The five broad specialty groups defined for this study are: (1) generalists, consisting of general practice and family practice physicians; (2) medical specialists; (3) surgical specialists; (4) anesthesiologists; and (5) physicians in other specialities, such as radiology, pathology, and psychiatry.

It also is generally observed and accepted that physicians' prices may vary from place to place geographically. The popular perception is that prices are highest in the major cities, lowest in rural areas, and

somewhere inbetween for lesser urbanized areas. To take the locality factor into account, the data base is geographically stratified to reflect Standard Metropolitan Statistical Areas (SMSAs) in Pennsylvania, with the further assumption that these may at least loosely represent distinct macro-market areas within the state. Twenty-seven of Pennsylvania's 67 counties are associated with SMSAs. With Philadelphia partitioned into a center city component and a suburban component, and aggregating all non-SMSA counties as a single group, there are a total of fifteen areas represented in this stratification.

III. MEASURES OF PRICING BEHAVIOR

Clear definition of the questions and issues being addressed always must precede measurement. The measurement itself then must be done in a manner that has a satisfactory degree of statistical validity and legitimacy, and further, must produce measures that have clear and reasonable meaning in relation to the original questions. In addition, measurement must be realizable in operationally practical terms, which sometimes dictates some compromise between reality and the ideal. The perfectly defined measure will be of no practical value, for instance, if it requires data which are not attainable, or if the associated computational demands are excessive.

For the first of these considerations, the key questions addressed in the present study may be outlined as follows:

(1) At the individual physician level --

- (a) What is each individual physician's usual price for each topic procedure for which he is represented in the data base? This is to be a single value indicating the physician's typical or most representative price level for the procedure.
- (b) For each physician-procedure pair represented in the data base, does the physician appear to exhibit some consistency in the price he charges for the procedure; or does his price appear to have a relatively high degree of variability, possibly exhibiting some price discrimination

from case to case?

(c) To the extent that there is variability in the fees charged by an individual physician, are his most typical fees concentrated on the high side of his fee distribution, with occasional exceptions being billed at a lesser fee level; or is his most typical charge on the low side of the distribution, with exception cases being billed at a higher level?

(2) At the physician population (cohort) level --

(a) For each topic procedure, what is the single price level that may be taken as most representative for all of the individual physicians in the group?

(b) For each procedure, relatively how consistent do the individual physicians in the group appear to be in their respective pricing practices? Do the individual physicians comprising the group most typically appear to exhibit some possible discriminatory behavior in their individual pricing practices; or do they most typically appear to have relatively consistent prices?

(c) For each procedure, how well do physicians in the group agree with one another on typical pricing levels? Are the typical, most representative prices for individual physicians in the group fairly close to one another; or are the individual physicians' typical and most representative prices scattered relatively widely?

(d) To the extent that different physicians exhibit different characteristic prices for the same procedure, do most of the physicians appear on the high side, or on the low side, of the range of characteristic fees?

The intent of this study is to place primary emphasis on the pricing behavior of individual physicians as individuals. As one of the necessary compromises with practical reality, however, it readily should be appreciated that the only way to draw generalizations about the individual pricing behaviors of 11,322 different physicians is in terms of summary statistical measures. It is possible, however, to employ conventional population statistics in such a manner as to place relatively greater emphasis either on individual physician characteristics or on collective characteristics of the overall population. The statistical measures described below, although developed at a population (or cohort) level, tend to emphasize representative individual physician characteristics.

A. PRICING CHARACTERISTICS FOR INDIVIDUAL PHYSICIANS

The first step in this study was to develop sets of statistics to describe characteristic pricing behavior for each individual physician, by specific procedure. This required, at the very least, an appropriate measure of central tendency to characterize the physician's "most representative" price, plus a measure of dispersion to serve as a suitable indicator of the relative consistency or variability in his pricing behavior.

1. Central Tendency

A physician's characteristic price for a given procedure should be expressed in terms of a single value indicating the fee level reflected in most of his billings -- i.e., that fee level which can be presumed to be most representative of the value which the physician places on the given service in most of the instances he provides it, even though he may occasionally have a different fee level under certain (presumably special or unusual) circumstances. Statistically this requires a measure of central tendency, which conventionally could be either the mean, median, or mode of the physician's distribution of billed charges (fees) for a given procedure. All three were, in fact, calculated; but for purposes of this study, the median was selected as the most convenient and appropriate measure of central tendency. The mean was felt to be unsuitable because of its sensitivity to extreme values, particularly in cases where there are relatively few observations. Moreover, the mean -- by the very way in which it is defined and determined -- could give a specific value that does not in fact exist anywhere in the distribution. The mode perhaps would have been the most theoretically correct statistic for the purpose intended (i.e., most commonly occuring value). However, the mode also is computationally and interpretively more difficult to deal with, particularly in view of the fact that some of the physicians' fee distributions exhibited more than a single mode. The median very frequently turned out to be identical to the mode, in any event.

2. Fee Dispersion

The degree of dispersion in an individual physician's distribution of fees for a given procedure was captured by calculating the standard deviation of the distribution about the mean. To facilitate a more meaningful interpretation of these dispersion statistics, the standard deviations were converted to coefficients of variation. The coefficient of variation (CV) for a data distribution is simply the standard deviation divided by the mean. The net effect of converting a standard deviation to a CV is that it standardizes the measure of dispersion to account for, and essentially removes the effect of, the relative scale factor arising from the general magnitude of the values represented in the distribution. As an example to better illustrate the general difficulty which this resolves, we may note that we would not have gained very much simply by knowing that the standard deviation of a given fee distribution is $5.00. This same standard deviation figure would have totally different significance and meaning relative to a distribution of office visit fees tending to be in the neighborhood of ten dollars than it would have in relation to a distribution of fees for a surgical procedure with a typical price in the neighborhood of one hundred dollars. For the office visit, the $5.00 standard deviation would convert to a coefficient of variation of .500 indicating that the standard deviation is fifty percent of the mean value; but for the surgical procedure, it would convert to a coefficient of variation of .050, indicating a standard deviation that is only five percent of the mean value, and therefore of much less consequence.

The practical interpretive value of the CV in this instance is

that it serves as a very useful indicator of the extent to which the physician is consistent in his pricing practices. A small CV indicates relatively uniform and consistent pricing; a relatively larger CV indicates that the physician has different prices at different times, or in different circumstances, for the same procedure. Interpretation of CVs is an essentially subjective matter, in the sense that the precise meaning of a given specific CV value usually is somewhat less than perfectly clear. Nevertheless, it remains true that a very small CV characterizes a doctor who engages in little or no price discrimination; and the larger the CV the greater the likelihood that the physician may be discriminating in his pricing practices.

The CV statistic has a minimum value of zero and is unbounded on the high side.

3. Skewness

The skewness of a data distribution is a statistical measure indicating the direction and extent of the distribution's deviation from symmetry. A skewness of zero indicates a distribution that is essentially symmetric, with exceptions on the high side of the mean and exceptions on the low side of the mean being more-or-less balanced. A positive skewness indicates that most of the cases are concentrated in the lower part of the range of values represented in the distribution, with a relatively smaller number of exception cases tailing off to the higher valued end of the range. Conversely, a negative skewness indicates that most of the cases are on the high side of the range of values represented, with a relatively smaller number of exception cases tailing off to the low end of the range.

The magnitude of the skewness, whether positive or negative, indicates how extreme is the departure from symmetry. The larger the value of the skewness, the more extreme the exception cases -- i.e., in a graphic representation, the longer the tail of the distribution to the side away from the main concentration.

For present purposes, the skewness statistic should -- at least in principle, tell us whether the physician tends usually to have a relatively lower fee, with the occasional exception cases being charged a somewhat higher fee, or *vice versa*. It also should provide some information as to how greatly the exception cases deviate from his usual fee. As a matter of practical fact, however, this statistic is quite hard to interpret at the individual physician level. In the first place, the sample sizes are relatively small for many of the individual physician-procedure pairs. Second, the fee distributions at the individual physician level are not necessarily even approximately normal; some are bimodal or multimodal. For both of these reasons, it seldom is really clear exactly what kind of distribution we are looking at in connection with any given individual physician's skewness measure. The skewness value cannot necessarily be assured to mean the same thing it would mean if one could confidently assume that the individual physician fee data distributions were reasonably normal. Further, while measures of central tendency and dispersion may have reasonably validity and practical meaning for relatively small samples (say, as small as ten observations), adequately large sample sizes become increasingly important in the calculation of higher order moments. In addition, it should be noted that this statistic in the present application may be influenced -- in ways

that are not necessarily readily determinable -- by the timing of an individual physician's price changes. Assuming, for example, a price increase late in the year, this would create a relatively small number of observations significantly above the overall mean of the annual distribution. This situation would exhibit as a positive skew, *ceteris paribus* -- but, without prior knowledge of the price change, would not necessarily be interpreted for what it really reflects.

Skewness measures were calculated in this study for fee distributions at the individual physician level; but, because of the interpretive difficulties cited above, they are not presented or interpreted in this report.

B. PRICING CHARACTERISTICS FOR GROUPS OF PHYSICIANS

In an examination of the pricing behavior of physicians, it is for some purposes important to concentrate upon individual physician behavior, and for other purposes important to concentrate upon the collective behavior of physicians. In either case, for reasons discussed above, appropriate measures must be developed at the physician population level. The population measures developed and calculated for purposes of this study are described and discussed below.

1. Characteristic Price Levels

Whether dealing with individual physician behavior or with the collective behavior of all (or a cohort of) physicians, characteristic price levels must be expressed in terms of a statistical measure of

central tendency. It already has been pointed out that each individual physician's characteristic price (for a given procedure) is represented in this study by the median of his fee distribution, as determined from the billed charges reported on his claims to PBS, both for Medicare Part B and for Blue Shield business. At the population (or cohort) level, the characteristic price for the population (or cohort) is taken as the mean of the median prices for all of the individual physicians in the group. In order to more accurately represent the pricing behavior of each and every individual physician in the group, this was taken as the simple (unweighted) arithmetic mean of the individual physician medians. A weighted mean, in which high volume physicians would be represented with proportionately greater influence, may be appropriate where the objective is to emphasize overall impact on the total market; but the objective in this study was to characterize the average, or typical, pricing behavior of individual physicians -- and for this purpose, the simple unweighted mean is more appropriate.

2. Consistency of Individual Physician Prices

Section III.A.2, above, already has discussed the usefulness of the individual physician's CV as an indicator of his propensity toward either relatively consistent pricing practices or relatively more discriminatory pricing behavior. The mean of the individual physicians' CVs was calculated as an indicator of the characteristic behavior of physicians in the group to typically be consistent, or to typically be variable (possibly consciously discriminatory), in their pricing behavior. As suggested by the earlier discussion, a low mean CV would indicate that

the individual physicians in the population (or cohort) tend, on the average, to have relatively consistent pricing practices. Conversely, a higher mean CV would indicate that the individual physicians in the group (population or cohort) tend to have some variabilty in their pricing practices, and possibly may be exercising some price discrimination from case to case.

3. Consistency of Collective Pricing Behavior

The foregoing emphasizes the relative consistency (or lack of consistency) in individual physicians' pricing behaviors. It also is of interest to have some insight into the relative consistency or inconsistency of collective pricing behavior for the overall physician population, or for various subgroups of physicians. To this end, a coefficient of variation was calculated for the distribution of individual physicians' median prices. It should be expected that there will be some variability in characteristic pricing practices between different physicians. Moreover, as the size of the physician sample grows larger, the distribution of individual physician medians tends toward normality. On the whole, for any given procedure and cohort of physicians, the CV of individual physicians' medians should be expected to be somewhat larger than the mean CV for the same procedure and physician cohort. This follows from the fact that characteristic prices normally may be expected to vary from physician to physician, whereas given individual physicians usually would be expected to have an established single price, with relatively narrow (if any) variation, for a given service. If the CV of the distribution of median prices for a cohort of physicians is relatively

small, this reflects a relatively high level of agreement between physicians in the cohort on the price of the service in question. A relatively large CV of medians, conversely, would reflect a situation in which there is great variability and very little price agreement from physician to physician.

If the CV of medians is extremely small, there may be some temptation to take this as evidence of possible collusion or price fixing. While this may indeed be a viable possibility in some instances, it must be cautioned that a low CV of medians (high agreement between physicians) also may simply be reflecting a procedure that is particularly unambiguous in definition and content, on which different physicians have a high level of common understanding and for which there would be very little qualitative difference between physicians in delivering the service (i.e., different physicians place very similar intrinsic valuation upon the service).

4. Population Skewness

The skewness of the distribution of individual physicians' median prices (for a given procedure) was calculated in order to provide some more definitive information regarding the pricing behavior of physicians (as a group) relative to one another. Briefly reviewing the earlier discussion of skewness measures, a skewness of zero (or near zero) would indicate a situation in which most physicians "go down the middle" in their characteristic pricing practices for the given procedure, with a relatively small number of comparatively high-priced and low-priced physicians being more-or-less well balanced against one another, both in

terms of their numbers and in terms of the extent of their deviation from the most common pricing practice. A negative skewness value would indicate that most physicians are on the high side of the characteristic price range, with exceptions departing mostly to the low side; and a positive skewness would indicate that most physicians are concentrated on the low side of the characteristic price range, with exceptions departing mostly to the high side. The greater the magnitude of the skewness measure (either positive or negative), the more pronounced is the asymmetry of the distribution, and the more extreme is the departure of the exception cases from the most common pricing practice.

C. SUMMARY REVIEW OF KEY MEASURES

At the individual physician level, the pricing characteristics selected as being most useful, meaningful, and realizable were the median and CV of each individual physician's empirical fee distribution (for specific procedures). For each individual physician, these statistical measures characterize, respectively, the physician's most representative price for a given procedure, and the relative consistency or variability of his reported fees for the procedure. These individual physician measures are summarized among the population statistics described below.

At the population level, this study concentrated upon: (1) the means of individual physicians' median prices, by specific procedure; (2) the means of the CVs for individual physicians' fee data distributions, by procedure; (3) the CVs of the distributions of individual physicians' median charges, by specific procedure; and (4) the skewness of the

distributions of individual physicians' median charges for specific procedures. For practical interpretation, these measures represent, respectively: (1) the characteristic price typically charged by individual physicians within a cohort, for a given service; (2) the characteristic pricing consistency typical of physicians within a cohort, for a given service; (3) the degree of characteristic price agreement or variability between different physicians in a cohort, for a specific service; and (4) the general tendency for most physicians in a cohort to be low (high) priced, with exceptions from the main concentration of physicians being mainly higher (lower) priced. These population statistics are used to describe the pricing characteristics and behavior of the overall Pennsylvania physician population, as represented by the extensive sample drawn for this study, for specific topic procedures. Comparisons between and within cohorts of physicians emphasize primarily the first three of the above population measures. As discussed earlier, physician cohorts are defined in this study by specialty group and by geographic area (SMSA).

IV. AGGREGATE FINDINGS

This section presents aggregate findings for the statewide sample of all physicians represented in the study data base. Summary findings are presented separately for physicians in the Blue Shield component of the data base and for those in the Medicare Part B component. Findings for Blue Shield and Medicare then are compared.

A. PHYSICIAN PRICING FOR BLUE SHIELD COVERAGE

Table 1 summarizes overall findings on physician pricing behavior for services covered by Blue Shield. The findings reported here are dervived from calendar year 1975 Blue Shield claims experience for 8,037 individual physicians. Data are displayed for each of the 44 topic procedures identified earlier in section II, organized by seven major generic categories of physician services: (1) general medical services and visits; (2) surgical procedures; (3) obstetrics; (4) anesthesia services; (5) diagnostic radiology; (6) diagnostic medical services; and (7) pathology. As explained and discussed previously in Section III, data for anesthesiology services are given on both an episode basis and a relative value unit basis. In addition to displaying aggregate physician pricing characteristics, the table indicates the number of individual physicians and the number of services represented for each of the listed procedures. Although the table is more or less self-explanatory, some additional general notes and observations follow below.

It should be noted that PBS has only a limited number of subscribers

TABLE 1. STATEWIDE AVERAGE PHYSICIAN PRICES AND PRICING CHARACTERISTICS FOR SELECTED SERVICES COVERED BY BLUE SHIELD (1975)

Procedure	N Doctors	Nr. Services	Avg. Price	Avg. RPU	Mean CV	CV of Medians	Population Skewness
Medical Services and Visits:							
Brief Office Visit	276	5,838	$ 8.59	.984	.055	.239	1.416
Intermediate Office Visit	239	5,754	10.27	1.176	.046	.246	1.897
Home Visit	0	0	-	-	-	-	-
Initial Hospital Visit	3,785	189,175	36.51	4.182	.054	.298	.783
Brief Hospital Visit	2,982	431,871	8.37	.959	.075	.370	1.004
Intermediate Hospital Visit	4,446	906,301	12.06	1.381	.084	.354	1.472
Comprehensive Consultation	2,179	100,923	41.62	4.767	.071	.300	.799
Surgical Procedures:							
Excision of Breat Cyst	212	4,189	137.05	15.699	.150	.262	.427
Arthrocentesis	1,034	61,704	17.71	2.029	.110	.333	.975
Colles Fracture	159	3,494	144.60	16.564	.189	.259	.658
Tonsillectomy (Child)	193	5,742	133.87	15.334	.059	.243	.656
Tonsillectomy (Adult)	151	4,026	149.83	17.163	.066	.200	.303
Appendectomy	167	2,766	272.20	31.180	.066	.190	.000
Proctosigmoidoscopy	911	62,707	26.19	3.000	.072	.329	.900
Cholecystectomy	231	4,095	430.01	49.257	.048	.152	.200
Herniorrhaphy	268	5,110	273.24	31.299	.065	.185	.165
TUR Prostate	84	1,502	538.39	61.671	.063	.140	.168
Dilation and Curettage (D&C)	369	10,687	131.32	15.042	.134	.255	.360
Hysterectomy	310	6,126	490.83	56.223	.052	.171	.630
Laminotomy (Herniated Disc)	59	1,824	676.22	77.459	.072	.192	.000
Lens Extraction	83	1,546	527.80	60.458	.039	.145	.051
Obstetrics:							
Vaginal Delivery	689	38,781	328.95	37.680	.054	.224	.046

TABLE 1. (CONTINUED -- Page 2 of 3)

Procedure	N Doctors	Nr. Services	Avg. Price	Avg. RPU	Mean CV	CV of Medians	Population Skewness
Anesthesia (by Episode):							
for Ex. Breast Cyst	75	2,474	$ 62.51	7.160	.150	.236	1.682
for Tonsillectomy (Child)	68	2,199	78.06	8.942	.101	.174	.681
for Tonsillectomy (Adult)	53	1,149	80.17	9.183	.116	.161	.632
for Appendectomy	78	2,020	104.00	11.913	.139	.164	.633
for Cholecystectomy	80	2,669	133.07	15.243	.146	.208	1.501
for Herniorrhaphy	98	3,290	86.90	9.954	.173	.216	1.343
for TUR Prostate	40	793	97.72	11.194	.174	.217	1.691
for D&C	98	5,189	50.32	5.764	.160	.185	.933
for Hysterectomy	110	4,325	141.40	16.197	.146	.183	.955
for Laminotomy	40	879	162.21	18.581	.134	.181	.683
for Lens Extraction	28	1,138	106.39	12.187	.170	.341	.171
Anesthesia (by Unit of Service):							
for Ex. Breast Cyst	75	16,067	9.81	1.124	.076	.144	.553
for Tonsillectomy (Child)	68	17,857	9.69	1.110	.062	.133	.388
for Tonsillectomy (Adult)	53	11,955	9.70	1.111	.071	.132	-.148
for Appendectomy	78	21,792	9.75	1.117	.077	.120	.192
for Cholecystectomy	80	37,086	9.67	1.108	.071	.134	.889
for Herniorrhaphy	98	29,253	9.90	1.134	.077	.140	.452
for TUR Prostate	40	7,978	9.91	1.135	.079	.143	.218
for D&C	98	26,990	9.93	1.137	.091	.143	.536
for Hysterectomy	110	62,804	9.84	1.127	.068	.131	.480
for Laminotomy	40	14,467	9.92	1.136	.066	.128	.086
for Lens Extraction	28	14,440	8.31	.952	.122	.270	-.246

TABLE 1. (CONTINUED -- Page 3 of 3)

Procedure	N Doctors	Nr. Services	Avg. Price	Avg. RPU	Mean CV	CV of Medians	Population Skewness
Diagnostic Radiology:							
Chest X-ray	423	100,722	$ 23.39	2.679	.039	.172	.418
Knee X-ray	245	19,790	23.43	2.684	.100	.257	1.159
Upper GI	192	24,050	47.90	5.487	.036	.184	.887
Barium Enema	115	8,881	42.65	4.885	.041	.202	.327
Cholestography	170	13,070	34.07	3.903	.039	.171	.423
Diagnostic Medical Services:							
Electrocardiogram (EKG)	2,499	286,084	20.54	2.353	.037	.210	.641
Electroencephalogram (EEG)	43	7,070	47.36	5.425	.087	.274	-.326
Pathology:							
Urinalysis	704	69,081	3.74	.428	.056	.342	1.227
Cholesterol Blood Test	551	34,101	5.82	.667	.056	.326	3.604
Fasting Blood Sugar (FBS)	1,038	65,390	4.90	.561	.049	.253	1.147
Complete Blood Count (CBC)	1,009	92,829	6.53	.748	.056	.270	1.200

covered for office visits. This is a category of services not normally included in Blue Shield benefit packages, and it has been provided to only a small number of Blue Shield group accounts under specially designed packages. This accounts for substantially smaller numbers of doctors and services than one might otherwise expect for office visits. Nevertheless, it may be noted that the samples still are of reasonably good size; and moreover, the office visit claims represented here come from several different parts of the state, so that there should be no particular geographic bias in the aggregate statistics.

Average prices listed in the table are "average price per physician," not "average price per service." Specifically, as pointed out in Section III.B.1, the average given here is an unweighted arithmetic mean of the individual representative fees (for a specific procedure) calculated across all of the individual doctors represented, with each individual doctor's representative fee taken as the median of his distribution of fees for a procedure. An unweighted mean is used because the intent here is to have the individual physician as the unit of observation, without distinguishing between high volume and low volume physicians.

It should be noted that actual prices listed in the table are 1975 prices, whereas the prices of physicians' services in Pennsylvania have gone up as much as 70 to 80 percent from 1975 to 1981. To escape the temporal inflationary effects associated with specific price level data, all specific prices have been converted to Relative Price Units (RPUs), and these also are listed in the table. The base for this conversion was the Medicare brief office visit. The RPU for each procedure thus is the average price value for the procedure, expressed as a multiple of the

average price value of a Medicare brief office visit. The net gain in converting the RPUs is the provision of a set of abstract values that reflect the relative scaling of the empirically observed price valuations for the several procedures without being unduly distracted or misled by specific price levels pegged to a specific point in time.

Mean CV, reflecting the average consistency of individual physicians' pricing behaviors, ranges from .036 (upper GI study) to .189 (reduction of Colles fracture). With the exception of episode-based anesthesia services, the great majority of procedures have mean CVs falling in an even narrower range from .050 to .080.

It may be pointed out that some part of the individual physician price variation reflected in the mean CVs would be attributable to routine price changes. Underlying variation due to price changes must be accepted here as a hidden and somewhat unknown factor, since no information was gathered or generated on the exact number, extent, or timing of price changes by individual physicians during the course of the year spanned by the data base. (Such information could have been obtainable in principle, but practical EDP and analytical demands were prohibitive.) On the other hand, it is possible to establish at least a reasonable intuitive sense of the underlying variation due to routine price changes. It can be shown, for instance, that each single percent of a mid-year price change will generate an increase of slightly less than .005 in the individual physician's CV. (Mid-year timing in a price change would maximize the impact in terms of variation in the fee data distribution, and hence would cause the greatest increase in CV, assuming equal service volumes in both halves of the year.) Thus, as a specific example, we can know that a CV

of .050 could be almost completely explained solely as the effect of a 10 percent mid-year price increase. In this light, a mean CV substantially greater than .050 could be interpreted as suggesting either some price discrimination or relatively large and/or frequent price increases, or both. A mean CV less than .050 not only would suggest little or no price discrimination; it also would suggest relatively limited price change.

The generally quite small mean CVs shown in Table 1 thus suggest some, but very little, price discrimination in Blue Shield services at the individual physician level. The mean CVs for some of the diagnostic services (x-rays, EKGs, etc.) seem to reflect individual provider pricing practices that are particularly tightly constrained and disciplined. The relatively large CV for reduction of a Colles fracture, incidentally, may have more to do with variation in how cases present clinically than with discriminating price behavior, per se. In general, procedures with greater degrees of ambiguity in the precise definition of the service, or which are relatively less uniform in terms of the amount of physician output required in order to perform the service from case to case, will have an intrinsic tendency toward larger CVs. This effect may be noticed in the mean CVs calculated for anesthesiology services on an episode basis. The relatively high mean CVs for episode-based data on anesthesiology services probably reflect legitimate case-to-case variation in the clinical situations involved. The unit-based CVs for anesthesiology services are comparatively more tight and stable.

The CV of medians, as discussed in Section III.B.3, provides a measure of the degree of agreement (or disagreement) between different physicians regarding characteristic price for a given procedure. In

contrast to the mean CV, which measured the average consistency of individual physicians' pricing practices, the CV of medians measures the consistency of pricing from doctor to doctor within a population of physicians. Interpretation of the exact meaning that may be attached to given values of the CV of medians is highly subjective. The following arbitrary guidelines are suggested: (1) values at or near .200, ranging up to .299, probably indicate more-or-less typical random variation and may be interpreted as representing degrees of variation consistent with normal group behavior; (2) values beyond .300 would reflect increasingly disparate behavior in a cohort of physicians, with no particularly strong sense of agreement between physicians regarding an appropriate price for a given service; (3) values substantially smaller than .200 would reflect a rather unusually small range of variation in pricing practices between physicians, and may be interpreted as indicating uncommonly uniform pricing behavior within a group.

Inspection of the values for CV of medians listed in Table 1 in general seems to indicate a degree of characteristic price variation from physician to physician that is rather as might be expected in most instances. Most procedures show variation, but not excessive variation, consistent with approximately normal statistical population behavior. Anesthesiology (unit-based data) and radiology appear as areas in which there is relatively high level of agreement between doctors. In contrast, there appears to be a relatively low level of agreement between physicians on pricing for hospital visits, for some pathology services, and for minor surgical procedures commonly performed in the office setting (arthrocentesis and proctosigmoidoscopy). In general, the population CVs

found in this study appear somewhat smaller than those reported in the literature, although generally falling within the range found in other studies.

Population skewness, as discussed in Section III.B.4, provides an indication of the relative tendency of physicians in a population to be concentrated on either the high side or the low side of the characteristic price range represented in the population. Zero skewness indicates a well balanced distribution, with physicians deviating in reasonable numbers more-or-less equally to the high side and low side of the price level characteristically charged by the main concentration of physicians. Progressively larger skewness values indicate progressively less symmetric distributions. Interpretation of the exact meaning of a given skewness magnitude again is subjective and quite arbitrary. Essentially, it entails a judgment as to how far a distribution may depart from perfect symmetry, and still be called "nearly symmetric" or "symmetric enough." For present purposes, let us say that anything up to an absolute value of 1.000 represents a reasonably well balanced distribution. Values larger than this would indicate increasingly severe concentrations on either the high side or the low side of the distribution, with increasingly severe exceptions tailing off to the opposite end of the range. As noted before, negative skewness indicates that the main concentration of physicians is on the high side of the characteristic price range, with a few relatively extreme exceptions on the low end of the range. Positive skewness indicates, conversely, relatively lower characteristic prices for the main concentration of physicians, with higher priced physicians being the exception.

Inspection of the population skewness statistics in Table 1 thus indicates that, for office visits and for hospital visits (other than an initial visit), most physicians tend to have characteristic fees that are on the high side of the range for these services. The low priced physician for these services is the exception. Physicians who perform pathology services are similarly distributed with respect to their pricing practices for pathology procedures. Most other procedures included in this study appear to be reasonably well balanced between physicians with relatively high or relatively low characteristic prices, but tending slightly toward concentration on the high side of the price range.

B. PHYSICIAN PRICING FOR MEDICARE PART B SERVICES

Table 2 is a parallel summary of overall findings on physician pricing behavior for 10,347 individual physicians reporting services for topic procedures under Medicare Part B. As in the preceding table, the display includes numbers of physicians and services represented for each procedure. The 1975 average price data again have been converted to Relative Price Units (RPUs), with the RPUs -- as before -- representing multiples of the average characteristic price of a Medicare brief office visit. Mean CV, CV of medians, and population skewness have the same meanings and interpretations as discussed above in relation to the Blue Shield data in Table 1.

The mean CV data again show certain diagnostic procedures to have more tightly constrained and disciplined individual physician pricing behavior than is evidenced for most other procedures. Medicare office

TABLE 2. STATEWIDE AVERAGE PHYSICIAN PRICES AND PRICING CHARACTERISTICS SELECTED SERVICES COVERED BY MEDICARE PART B (1975)

Procedure	N Doctors	Nr. Services	Avg. Price	Avg. RPU	Mean CV	CV of Medians	Population Skewness
Medical Services and Visits:							
Brief Office Visit	7,418	1,642,568	$ 8.73	1.000	.165	.292	.906
Intermediate Office Visit	6,462	1,789,605	10.97	1.257	.116	.325	1.363
Home Visit	1,727	194,435	12.82	1.468	.084	.292	.940
Initial Hospital Visit	3,653	229,813	36.29	4.157	.062	.306	.771
Brief Hospital Visit	3,559	767,119	8.52	.976	.076	.357	.850
Intermediate Hospital Visit	4,562	1,811,482	11.85	1.357	.069	.341	1.399
Comprehensive Consultation	2,358	142,699	41.35	4.737	.077	.302	.829
Surgical Procedures:							
Excision of Breast Cyst	3	45	172.33	19.740	.221	.044	.199
Arthrocentesis	777	37,334	17.03	1.951	.146	.331	.932
Colles Fracture	41	727	151.33	17.334	.148	.244	.649
Tonsillectomy (Child)	0	0	-	-	-	-	-
Tonsillectomy (Adult)	0	0	-	-	-	-	-
Appendectomy	0	0	-	-	-	-	-
Proctosigmoidoscopy	771	31,510	26.49	3.034	.102	.326	.820
Cholecystectomy	54	724	419.66	48.071	.076	.130	.652
Herniorrhaphy	142	2,306	279.02	31.961	.081	.202	.173
TUR Prostate	194	8,433	558.50	63.975	.089	.166	-.018
Dilation and Curettage (D&C)	14	166	126.43	14.482	.112	.189	.586
Hysterectomy	4	53	543.75	62.285	.063	.095	.200
Laminotomy (Herniated Disc)	4	83	721.25	82.617	.082	.114	.650
Lens Extraction	297	12,745	535.07	61.291	.045	.161	.432
Obstetrics:							
Vaginal Delivery	0	0	-	-	-	-	-

TABLE 2. (CONTINUED -- Page 2 of 3)

Procedure	N Doctors	Nr. Services	Avg. Price	Avg. RPU	Mean CV	CV of Medians	Population Skewness
Anesthesia (by Episode):							
for Ex. Breast Cyst	11	171	$ 74.05	8.482	.186	.161	.620
for Tonsillectomy (Child)	0	0	-	-	-	-	-
for Tonsillectomy (Adult)	0	0	-	-	-	-	-
for Appendectomy	0	0	-	-	-	-	-
for Cholecystectomy	38	909	136.89	15.680	.171	.202	.754
for Herniorrhaphy	64	1,618	95.63	10.954	.183	.239	1.358
for TUR Prostate	98	3,699	106.82	12.236	.170	.178	.609
for D&C	15	278	61.72	7.070	.185	.175	.081
for Hysterectomy	7	93	142.00	16.266	.150	.000	.048
for Laminotomy	0	0	-	-	-	-	-
for Lens Extraction	68	4,603	113.99	13.057	.136	.303	-.088
Anesthesia (by Unit of Service):							
for Ex. Breast Cyst	11	1,277	9.95	1.140	.086	.132	.943
for Tonsillectomy (Child)	0	0	-	-	-	-	-
for Tonsillectomy (Adult)	0	0	-	-	-	-	-
for Appendectomy	0	0	-	-	-	-	-
for Cholecystectomy	38	13,252	9.74	1.116	.094	.131	.813
for Herniorrhaphy	64	16,043	9.83	1.126	.097	.145	.955
for TUR Prostate	98	40,417	9.64	1.104	.088	.133	.845
for D&C	15	1,710	10.41	1.192	.101	.185	.833
for Hysterectomy	14	2,728	10.14	1.162	.069	.125	-.453
for Laminotomy	0	0	-	-	-	-	-
for Lens Extraction	67	45,178	8.68	.994	.096	.237	-.419

TABLE 2. (CONTINUED -- Page 3 of 3)

Procedure	N. Doctors	Nr. Services	Avg. Price	Avg. RPU	Mean CV	CV of Medians	Population Skewness
Diagnostic Radiology:							
Chest X-ray	389	45,656	$ 23.38	2.678	.051	.167	.567
Knee X-ray	131	4,715	23.22	2.660	.118	.255	1.535
Upper GI	156	8,358	48.36	5.540	.061	.190	.844
Barium Enema	111	4,951	42.62	4.882	.058	.204	.339
Cholestography	104	3,137	33.61	3.850	.053	.177	.742
Diagnostic Medical Services:							
Electrocardiogram (EKG)	2,351	249,376	20.26	2.321	.060	.210	.691
Electroencephalogram (EEG)	26	3,363	45.50	5.212	.098	.278	-.151
Pathology:							
Urinalysis	1,812	211,342	3.25	.372	.100	.363	1.390
Cholesterol Blood Test	713	50,085	5.62	.644	.061	.299	3.480
Fasting Blood Sugar (FBS)	2,091	263,490	4.57	.523	.070	.254	.986
Complete Blood Count (CBC)	1,392	162,391	6.19	.709	.077	.275	1.258

visits and certain surgical procedures, on the other hand, are shown to exhibit a relatively high level of variability for individual physicians on the average. Some price discrimination may be indicated here.

The CV of medians shows patterns slightly more mixed than those observed for Blue Shield services. As previously observed for Blue Shield services, there is a relatively high level of price agreement between physicians for diagnostic radiology services. Anesthesiology services also appear again as an area in which there is good price agreement between physicians, but the agreement is less strong than that observed for Blue Shield services. Also as before, there is a generally low level of agreement between physicians on prices for office visits, hospital visits, and minor surgical procedures typically performed in the office setting.

A more detailed comparison of Blue Shield and Medicare findings is undertaken in the following subsection.

C. COMPARISON OF PRICING PRACTICES UNDER MEDICARE AND BLUE SHIELD

Combining selected data items from Tables 1 and 2, Table 3 presents a summary comparison of physician pricing practices for services delivered under the Blue Shield and Medicare programs.

Price data in Table 3 are shown only as RPUs. A column has been added to display the ratio of the characteristic Medicare price to the characteristic Blue Shield price (for procedures represented for both programs in the data base). If this ratio is greater than 1.000 the Medicare price is higher; and conversely, if the ratio is less than

TABLE 3. COMPARISON OF BLUE SHIELD AND MEDICARE STATEWIDE AVERAGE PRICES FOR SELECTED PHYSICIAN SERVICES

Procedure	Relative Price Units		Medicare/BS	Mean CV		CV of Medians	
	Blue Shield	Medicare	Price Ratio	Blue Shield	Medicare	Blue Shield	Medicare
Medical Services and Visits:							
Brief Office Visit	.984	1.000	1.106	.055	.165	.239	.292
Intermediate Office Visit	1.176	1.257	1.069	.046	.116	.246	.325
Home Visit	-	1.468	-	-	.084	-	.292
Initial Hospital Visit	4.182	4.157	.994	.054	.062	.298	.306
Brief Hospital Visit	.959	.976	1.018	.075	.076	.370	.357
Intermediate Hospital Visit	1.381	1.357	.983	.084	.069	.354	.341
Comprehensive Consultation	4.767	4.737	.994	.071	.077	.300	.302
Surgical Procedures:							
Excision of Breast Cyst	15.699	19.740	1.257	.150	.221	.262	.044
Arthrocentesis	2.029	1.951	.962	.110	.146	.333	.331
Colles Fracture	16.564	17.334	1.046	.189	.148	.259	.244
Tonsillectomy (Child)	15.334	-	-	.059	-	.243	-
Tonsillectomy (Adult)	17.163	-	-	.066	-	.200	-
Appendectomy	31.180	-	-	.066	-	.190	-
Proctosigmoidoscopy	3.000	3.034	1.011	.072	.102	.329	.326
Cholecystectomy	49.257	48.071	.976	.048	.076	.152	.130
Herniorrhaphy	31.299	31.961	1.021	.065	.081	.185	.202
TUR Prostate	61.671	63.975	1.037	.063	.089	.140	.166
Dilation and Curettage (D&C)	15.042	14.482	.963	.134	.112	.255	.189
Hysterectomy	56.233	62.285	1.108	.052	.063	.171	.095
Laminotomy (Herniated Disc)	77.459	82.619	1.067	.072	.082	.192	.114
Lens Extraction	60.458	61.291	1.014	.039	.045	.145	.161
Obstetrics:							
Vaginal Delivery	37.680	-	-	.054	-	.224	-

TABLE 3. (CONTINUED -- Page 2 of 3)

Procedure	Relative Price Units		Medicare/BS	Mean CV		CV of Medians	
	Blue Shield	Medicare	Price Ratio	Blue Shield	Medicare	Blue Shield	Medicare
Anesthesia (by Episode):							
for Ex. Breast Cyst	7.160	8.482	1.185	.150	.186	.236	.161
for Tonsillectomy (Child)	8.942	-	-	.101	-	.174	-
for Tonsillectomy (Adult)	9.183	-	-	.116	-	.161	-
for Appendectomy	11.913	-	-	.139	-	.164	-
for Cholecystectomy	15.243	15.680	1.029	.146	.171	.208	.202
for Herniorrhaphy	9.954	10.954	1.100	.173	.183	.216	.239
for TUR Prostate	11.194	12.236	1.093	.174	.170	.217	.178
for D&C	5.764	7.070	1.227	.160	.185	.185	.175
for Hysterectomy	16.197	16.266	1.004	.146	.150	.183	.000
for Laminotomy	18.581	-	-	.134	-	.181	-
for Lens Extraction	12.187	13.057	1.071	.170	.136	.341	.303
Anesthesia (by Unit of Service)							
for Ex. Breast Cyst	1.124	1.140	1.014	.076	.086	.144	.132
for Tonsillectomy (Child)	1.110	-	-	.062	-	.133	-
for Tonsillectomy (Adult)	1.111	-	-	.071	-	.132	-
for Appendectomy	1.117	-	-	.077	-	.120	-
for Cholecystectomy	1.108	1.116	1.007	.071	.094	.134	.131
for Herniorrhaphy	1.134	1.126	.993	.077	.097	.140	.145
for TUR Prostate	1.135	1.104	.973	.079	.088	.143	.133
for D&C	1.137	1.192	1.048	.091	.101	.143	.185
for Hysterectomy	1.127	1.162	1.031	.068	.068	.131	.125
for Laminotomy	1.136	-	-	.066	-	.128	-
for Lens Extraction	.952	.994	1.044	.122	.096	.270	.237

TABLE 3. (CONTINUED -- Page 3 of 3)

Procedure	Relative Price Units		Medicare/BS	Mean CV		CV of Medians	
	Blue Shield	Medicare	Price Ratio	Blue Shield	Medicare	Blue Shield	Medicare
Diagnostic Radiology:							
Chest X-ray	2.679	2.678	1.000	.039	.051	.172	.167
Knee X-ray	2.684	2.660	.991	.100	.118	.257	.255
Upper GI	5.487	5.540	1.010	.036	.061	.184	.190
Barium Enema	4.885	4.882	.999	.041	.058	.202	.204
Cholestography	3.903	3.850	.986	.039	.053	.171	.177
Diagnostic Medical Services:							
Electrocardiogram (EKG)	2.353	2.321	.986	.037	.060	.210	.210
Electroencephalogram (EEG)	5.425	5.212	.961	.087	.098	.274	.278
Pathology:							
Urinalysis	.428	.372	.869	.056	.100	.342	.363
Cholesterol Blood Test	.667	.644	.966	.056	.061	.326	.299
Fasting Blood Sugar (FBS)	.561	.523	.932	.049	.070	.253	.254
Complete Blood Count (CBC)	.748	.709	.948	.056	.077	.270	.275

1.000, the Medicare price is lower. The amount by which this ratio differs from 1.000 can be translated directly into a percentage difference between the representative Medicare price and the representative Blue Shield price for the same procedure. The table value of 1.106 at the top of the ratio column shows, for example, that the average physician charges Medicare beneficiaries 10.6 percent more for a brief office visit than is charged on the average by physicians serving Blue Shield subscribers. For arthrocentesis (under the surgical procedure group), the listed ratio of .962 differs from 1.000 by .038, indicating that the average physician performing this service for a Medicare beneficiary charges 3.8 percent less than is charged by the average doctor performing the same service for a Blue Shield subscriber.

Comparing average relative price levels for Medicare and Blue Shield, the results for general medical services and visits are mixed. For the six procedures on which there is common experience, the Medicare price is higher on three and lower on the other three. Medicare office visit fees are substantially higher than for Blue Shield; but for hospital visits and consultation there is very little difference one way or the other.

In the surgical procedure group, the Medicare price is higher on eight, and lower on three, of the procedures for which there is common experience. The price difference is really sizable only for excision of breast cyst, for hysterectomy, and for laminotomy (herniated disc). All of these are represented by very few physicians and comparatively few services for Medicare, however. In general, (reflected from Tables 1 and 2) there is relatively less surgery under the Medicare program than under the Blue Shield program. Arthrocentesis and proctosigmoidoscopy, both of

which are most commonly performed in the office setting, have high volumes in Medicare as well as in Blue Shield. For these, the Medicare price is slightly lower for arthrocentesis and very slightly higher for proctosigmoidoscopy. Among the remaining surgical procedures examined, there is substantial Medicare incidence only for herniorrhaphy, TUR prostate, and lens extraction (not surprising, since these are procedures related to problems with higher rates of incidence among the elderly). For all three of these particular procedures, the average physician's price is marginally higher to Medicare.

Average physicians' prices for anesthesiology services, when examined on an episode basis, are quite a bit higher on the whole for Medicare than for Blue Shield. It may be surmised, however, that a large part of this difference is a reflection of clinical differences having to do with patient age and general physical condition. When examined on a relative value unit basis, anesthesiology services for Medicare still are higher for many procedures, but the difference in most instances is relatively marginal.

Diagnostic radiology services have extremely close price levels between the two programs. Prices for diagnostic medical services are marginally lower for the Medicare program. Typical physicians' prices for pathology services are lower in the Medicare program by proportions ranging from 3.4 percent to 13.1 percent.

Looking at the two columns of mean CV data, a good comparison can be made of the relative consistency of individual physician pricing practices between these two programs. For office visits, there is a considerable difference, with higher values for Medicare suggesting that individual

physicians are prone to use a greater variety of different prices for their Medicare patients, possible discriminating on a case-to-case or patient-to-patient patient basis. For hospital visits and consultation, there is very little difference in mean CV between Medicare and Blue Shield.

The Medicare mean CV is larger than the Blue Shield mean CV on nine of the eleven surgical procedures the two programs have in common. The Medicare values are higher for all of the listed surgical procedures with high incidence under Medicare (arthrocentesis, proctosigmoidoscopy, herniorrhaphy, TUR prostate, and excision of lens). The differences are not very great, however. These results could be interpreted as suggesting that individual physicians who perform surgical procedures have a very faint tendency toward more price discrimination with Medicare patients.

There is no appreciable difference in mean CV between Medicare and Blue Shield for anesthesiology services. Physicians who perform anesthesiology services apparently make very little differentiation in their pricing practices for these two programs.

The comparative mean CV values for all diagnostic services and tests suggest that individual physicians performing these services exhibit slightly greater diversity in their prices for Medicare patients than for Blue Shield patients. Again, however, the differences are slight.

In comparing the two sets of data on CV of medians, the Blue Shield and Medicare patterns in general appear very similar and very close to one another. The pattern is just slightly more mixed in Medicare. To the extent that differences do appear, there is no consistent pattern to the difference. Sometimes the Blue Shield value is higher, sometimes

Medicare. The only large differences are for a few surgical procedures which already have been identified as having small Medicare physician and incidence samples, therefore possibly not being truly representative. The level of agreement between physicians on pricing practices does not appear to be markedly different between the two programs.

V. FINDINGS WITHIN SPECIALTY GROUPS

Intuition, theory, and common experience all suggest differences between specialists and generalists, and between various types of specialists. The primary consideration in setting specialists apart from generalists, and in differentiating between various types of specialists, is that the specialist is presented as having especially high levels of skills, training, and general expertise relative to particular types of services. This translates into a presumed higher quality of service obtainable from a specialist performing services in his special area of expertise, which in turn has implications for the level of prices a specialist can command in the marketplace for his services.

When physicians are viewed as a single overall population, these distinctions become blurred. The analysis thus is sharpened by controlling for specialty, even if only at the level of broad specialty classes. In this section, there are separate examinations of characteristic pricing behaviors for each of five broad specialty groups: (a) generalists, including physicians in general practice and family practice; (b) medical specialists; (c) surgical specialists; (d) anesthesiologists; and (e) other specialists. *A priori* expectations would include higher prices for specialists working in their special areas of expertise, and perhaps more consistent and sharply focused collective pricing behavior within groups as the respective cohorts of physicians become relatively more homogeneous in terms of the types and levels of skills and training represented.

A. GENERAL AND FAMILY PRACTICE

Table 4 presents a summary of generalist physician pricing characteristics for both Blue Shield and Medicare, paralleling the information presented in Table 3 for the overall physician population.

As expected, generalists' price levels are uniformly lower than for the population of physicians as a whole, with the exception of pathology services. For pathology services, generalist prices are approximately the same as those indicated for the overall physician population. General/family practice physicians appear to give a slightly greater price break to Medicare patients, as indicated in the ratio column, than is true of physicians as a whole. This occurs most dramatically for office visits, where the average generalist's brief office visit price for Medicare is seen to be 7.2 percent lower than for Blue Shield, compared to being 10.6 percent higher in the same comparison for all physicians.

As measured by the mean CV, general/family practice physicians appear to be generally more consistent in their individual pricing behaviors than was observed for all physicians, suggesting that on the whole they discriminate less. The improvement in individual physician pricing consistency (or apparent reduction in discrimination) is rather slight, however, for most procedures. A notable exception to the general pattern observed here is the brief office visit. For this procedure, the average individual generalist physician exhibits considerable variability in his pricing to Blue Shield patients, quite possibly price discriminating; but the average generalist then also appears to have little or no price discrimination under Medicare. This is precisely opposite to the

TABLE 4. COMPARATIVE CHARACTERISTICS OF BLUE SHIELD AND MEDICARE PRICES FOR SELECTED SERVICES PERFORMED BY PHYSICIANS IN GENERAL/FAMILY PRACTICE

Procedure	Relative Price Units		Medicare/BS	Mean CV		CV of Medians	
	Blue Shield	Medicare	Price Ratio	Blue Shield	Medicare	Blue Shield	Medicare
Medical Services and Visits:							
Brief Office Visit	.940	.872	.928	.147	.054	.218	.177
Intermediate Office Visit	1.048	1.032	.985	.045	.110	.155	.232
Home Visit	-	1.386	-	-	.089	-	.271
Initial Hospital Visit	3.623	3.519	.971	.044	.053	.259	.262
Brief Hospital Visit	.853	.860	1.008	.068	.073	.336	.333
Intermediate Hospital Visit	1.227	1.196	.975	.075	.065	.357	.335
Comprehensive Consultation	3.946	3.939	.998	.050	.058	.336	.312
Surgical Procedures:							
Arthrocentesis	1.969	1.864	.947	.096	.130	.323	.333
Tonsillectomy (Child)	11.294	-	-	.076	-	.124	-
Proctosigmoidoscopy	2.427	2.330	.960	.057	.067	.339	.348
Obstetrics:							
Vaginal Delivery	26.023	-	-	.053	-	.210	-
Diagnostic Radiology:							
Chest X-ray	2.606	2.667	1.023	.053	.058	.191	.187
Diagnostic Medical Services:							
Electrocardiogram (EKG)	2.315	2.266	.979	.036	.061	.229	.231
Pathology:							
Urinalysis	.425	.347	.816	.059	.115	.329	.363
Cholesterol Blood Test	.677	.655	.968	.058	.064	.276	.267
Fasting Blood Sugar (FBS)	.565	.515	.912	.047	.074	.245	.262
Complete Blood Count (CBC)	.756	.710	.939	.057	.082	.241	.250

observation for all physicians, where there was a suggestion of discrimination under Medicare, but little or none under Blue Shield.

The level of agreement in pricing between different physicians, as reflected by the CV of medians, is greater within the cohort of general/family practice physicians than was observed for the overall physician population, for most procedures. For generalists performing chest x-rays and EKGs, the level of agreement between physicians is not as good as for all physicians, but still is quite good in absolute terms. There is poor agreement between generalist physicians on prices for follow-up hospital visits, for consultations, and for minor surgical procedures performed in the office setting.

B. MEDICAL SPECIALTIES

Comparative summary characteristics of Blue Shield and Medicare prices for physicians in medical specialties are displayed in Table 5. Again as expected, medical specialists' prices for general medical services, visits, consultations, and diagnostic medical services are higher than the averages for all physicians. They are marginally lower, however, for the minor surgical procedures (arthrocentesis and proctosigmoidoscopy). Medical specialists' prices also are uniformly lower than average for diagnostic radiology services. For pathology services, Medical specialists' prices are more-or-less average. Consistent with their training and general philosophy of practice, medical specialists tend to perform very little, if any, definitive surgery -- and so, are not listed for these kinds of procedures.

TABLE 5. COMPARATIVE CHARACTERISTICS OF BLUE SHIELD AND MEDICARE PRICES FOR SELECTED SERVICES PERFORMED BY PHYSICIANS IN MEDICAL SPECIALTIES

Procedure	Relative Price Units		Medicare/BS Price Ratio	Mean CV		CV of Medians	
	Blue Shield	Medicare		Blue Shield	Medicare	Blue Shield	Medicare
Medical Services and Visits:							
Brief Office Visit	1.053	1.090	1.035	.062	.160	.321	.276
Intermediate Office Visit	1.354	1.356	1.001	.041	.103	.248	.288
Home Visit	-	1.702	-	-	.075	-	.283
Initial Hospital Visit	4.669	4.777	1.023	.055	.060	.276	.275
Brief Hospital Visit	1.027	1.105	1.076	.071	.069	.365	.316
Intermediate Hospital Visit	1.467	1.478	1.007	.081	.064	.328	.303
Comprehensive Consultation	5.223	5.245	1.004	.063	.065	.275	.274
Surgical Procedures:							
Arthrocentesis	1.903	1.867	.981	.088	.137	.313	.305
Proctosigmoidoscopy	2.711	2.743	1.012	.056	.070	.283	.293
Diagnostic Radiology:							
Chest X-ray	2.623	2.627	1.002	.041	.051	.156	.151
Knee X-ray	2.395	-	-	.090	-	.235	-
Upper GI	5.132	5.097	.993	.035	.059	.200	.212
Barium Enema	4.767	4.564	.957	.021	.034	.200	.178
Cholestography	3.769	3.589	.952	.040	.036	.180	.165
Diagnostic Medical Services:							
Electrocardiogram (EKG)	2.364	2.338	.989	.038	.060	.195	.195
Pathology:							
Urinalysis	.423	.383	.905	.052	.086	.341	.363
Cholesterol Blood Test	.655	.638	.974	.053	.050	.336	.334
Fasting Blood Sugar (FBS)	.553	.529	.957	.050	.062	.238	.242
Complete Blood Count (CBC)	.737	.708	.961	.056	.069	.285	.290

In general, medical specialists do not appear to be giving any price breaks to Medicare for general medical services and visits, which comprise the medical specialist's main stock in trade. They do, however, give a better than average price advantage to Medicare for most diagnostic radiology services. They also give a price advantage to Medicare for EKG and pathology services, but on the whole not as great a price break as the average for all physicians.

The pattern for degree of consistency in individual physicians' pricing practices (mean CV) is quite similar to that observed for all physicians. In general, the mean CVs in this table suggest very little price discrimination at the individual physician level for the various categories of diagnostic services. Some mild price discrimination might be indicated for Medicare office visits and for Medicare arthrocentesis. For all other visits, consultations, and minor (office setting) surgical procedures, the data suggest a possibility of some -- but very little -- price discrimination. For most procedures, the comparative mean CV data indicate somewhat more extensive individual physician price discrimination (or price changes) for Medicare than for Blue Shield.

The level of characteristic price agreement between physicians (CV of medians) is relatively low for Blue Shield brief office visits and for follow-up hospital visits under both programs. For all other visits and consultations, agreement is about average. Agreement is generally good in diagnostic medical services and diagnostic radiology. For minor surgery and for pathology services, characteristic price agreement between medical specialists ranges from fair to poor. In general, the agreement between physicians within this cohort appears to be a little bit tighter than

among all physicians.

C. SURGICAL SPECIALTIES

Table 6 lists the comparative prices of Blue Shield and Medicare prices for services by surgical specialists.

Surgical specialists are shown to have greater than average prices for office visits, but prices for other visits and consultations that are approximately average or lower. The relative price levels listed for surgical specialists for surgical procedures are very close to the averages for all physicians, but this is simply because most surgery is performed by surgical specialists. Surgical specialists tend to vary around the all physician average prices for diagnostic radiology, to have slightly high prices for diagnostic medical services, and to have relatively high prices for pathology services.

Surgical specialists are shown to give a slight, but smaller than average, price break to Medicare patients for brief office visits. They give a much greater than average price break (17.3 percent) to Medicare patients for intermediate office visits. For hospital visits and consultations, surgical specialists tend to have Medicare prices and Blue Shield prices that are very close to one another, with a very small price advantage in favor of Medicare; and in this respect they are quite similar to the averages for all physicians. For surgical procedures, there is an even split between higher Medicare prices and higher Blue Shield prices. The procedures for which Medicare prices are higher include those with higher incidence among the elderly, however. Surgical

TABLE 6. COMPARATIVE CHARACTERISTICS OF BLUE SHIELD AND MEDICARE PRICES FOR SELECTED SERVICES PERFORMED BY PHYSICIANS IN SURGICAL SPECIALTIES

Procedure	Relative Price Units		Medicare/BS	Mean CV		CV of Medians	
	Blue Shield	Medicare	Price Ratio	Blue Shield	Medicare	Blue Shield	Medicare
Medical Services and Visits:							
Brief Office Visit	1.082	1.102	1.018	.058	.195	.271	.292
Intermediate Office Visit	1.200	1.407	1.173	.045	.135	.253	.314
Home Visit	-	1.449	-	-	.068	-	.294
Initial Hospital Visit	3.976	3.993	1.004	.066	.079	.281	.277
Brief Hospital Visit	.986	.978	.992	.084	.087	.375	.364
Intermediate Hospital Visit	1.384	1.344	.971	.096	.081	.352	.340
Comprehensive Consultation	4.258	4.219	.991	.085	.094	.289	.291
Surgical Procedures:							
Excision of Breast Cyst	15.740	-	-	.149	-	.260	-
Arthrocentesis	2.163	2.064	.954	.137	.166	.337	.336
Colles Fracture	16.545	17.296	1.045	.189	.148	.260	.248
Tonsillectomy (Child)	15.526	-	-	.058	-	.240	-
Tonsillectomy (Adult)	17.182	-	-	.067	-	.199	-
Appendectomy	31.220	-	-	.064	-	.190	-
Proctosigmoidoscopy	3.353	3.306	.986	.085	.124	.302	.308
Cholecystectomy	49.305	48.071	.975	.047	.076	.151	.130
Herniorrhaphy	31.283	31.975	1.022	.065	.080	.186	.203
TUR Prostate	61.449	63.835	1.039	.063	.088	.137	.167
Dilation and Curettage (D&C)	15.052	14.482	.962	.133	.112	.254	.189
Hysterectomy	56.259	-	-	.052	-	.170	-
Laminotomy (Herniated Disc)	78.005	-	-	.074	-	.185	-
Lens Extraction	60.458	61.208	1.024	.039	.045	.145	.159
Obstetrics:							
Vaginal Delivery	39.667	-	-	.054	-	.182	-

TABLE 6. (CONTINUED -- Page 2 of 2)

Procedure	Relative Price Units		Medicare/BS	Mean CV		CV of Medians	
	Blue Shield	Medicare	Price Ratio	Blue Shield	Medicare	Blue Shield	Medicare
Diagnostic Radiology:							
Chest X-ray	2.601	2.534	.974	.043	.074	.191	.187
Knee X-ray	2.926	2.904	.992	.125	.118	.262	.267
Diagnostic Medical Services:							
Electrocardiogram (EKG)	2.599	2.606	1.003	.036	.067	.219	.217
Electroencephalogram (EEG)	5.498	-	-	.028	-	.149	-
Pathology:							
Urinalysis	.497	.423	.851	.071	.106	.380	.409
Cholesterol Blood Test	.874	.691	.791	.054	.080	.506	.240
Fasting Blood Sugar (FBS)	.656	.578	.881	.064	.059	.342	.242
Complete Blood Count (CBC)	.788	.749	.951	.048	.043	.355	.385

specialists tend to give a greater than average price differential to Medicare for pathology services, although their general price levels for these kinds of services are higher than average for both Blue Shield and Medicare.

In examining the mean CVs, surgical specialists are seen to have less consistency in individual physician pricing almost uniformly for all general medical services and visits. Paralleling the findings for all physicians, these specialists show less consistency in individual physician pricing under Medicare than under Blue Shield for nearly all general medical services and visits, with Medicare office visits appearing as particularly likely objects of price discrimination. The mean CVs for surgical procedures are very similar to those seen for all physicians, again reflecting the fact that nearly all surgery is done by surgical specialists. Arthrocentesis and proctosigmoidoscopy, the two surgical procedures commonly done by other kinds of physicians, show smaller mean CVs (and much more consistent pricing practice by individual physicians) than was found for the overall physician population. For diagnostic services, the consistency of individual surgical specialists' pricing practices relative to the consistency for all physicians, is greatly mixed. Evidence of possible discriminatory behavior is most pronounced for X-rays of the knee (both programs) and for urinalysis under Medicare. Individual physician pricing consistency is extraordinarily tight for EEGs.

The CV of medians indicates, for nearly all procedures, a pattern of price agreement between different physicians that is very similar to that of the all physician population. There is good agreement on pricing for

surgical procedures for all except arthrocentesis and proctosigmoidoscopy; and even these show better agreement than the average for all physicians. There is high agreement on pricing for EEG under Medicare; and there is agreement on EKG and diagnostic radiology very similar to that for all physicians. Surgical specialists appear to be particularly diverse in their pricing practices for pathology services.

D. ANESTHESIOLOGY

Nearly all anesthesiology services are performed by physicians who identify themselves as anesthesiologists. Hence the comparative price characteristics shown in Table 7 for anesthesiology services performed by anesthesiologists are extremely close to the comparative pricing data for these services shown earlier for all doctors.

As noted previously, the episode-based data show significantly higher charges to Medicare than to Blue Shield for anesthesia services. The differences are much greater than those found in the RVU-based data, suggesting that the episode-based data are in large measure reflecting clinical differences arising from the more advanced age and generally less sound physical condition of Medicare patients. The mean CVs also are almost uniformly larger in the episode-based data than in the unit-based data, again suggesting clinical differences from one case to another in the episode-based results.

On an RVU basis, the Medicare/Blue Shield Price Ratios indicate average Blue Shield and Medicare prices to be very close for anesthesiology services related to most surgical procedures. The largest

TABLE 7. COMPARATIVE CHARACTERISTICS OF BLUE SHIELD AND MEDICARE PRICES FOR SELECTED SERVICES PERFORMED BY ANESTHESIOLOGISTS

Procedure	Relative Price Units		Medicare/BS	Mean CV		CV of Medians	
	Blue Shield	Medicare	Price Ratio	Blue Shield	Medicare	Blue Shield	Medicare
Medical Services and Visits:							
Brief Office Visit	-	1.015	-	-	.148	-	.267
Intermediate Office Visit	-	1.175	-	-	.139	-	.270
Brief Hospital Visit	-	.952	-	-	.058	-	.313
Intermediate Hospital Visit	1.173	1.518	1.294	.064	.080	.229	.375
Comprehensive Consultation	-	4.826	-	-	.092	-	.135
Anesthesia (by Episode):							
for Ex. Breast Cyst	7.174	8.482	1.182	.150	.186	.236	.161
for Tonsillectomy (Child)	8.967	-	-	.101	-	.173	-
for Tonsillectomy (Adult)	9.221	-	-	.042	-	.159	-
for Appendectomy	11.913	-	-	.139	-	.164	-
for Cholecystectomy	15.243	15.680	1.029	.146	.171	.208	.202
for Herniorrhaphy	9.966	11.044	1.108	.049	.182	.217	.236
for TUR Prostate	11.194	12.247	1.094	.174	.173	.217	.181
for D&C	5.771	7.231	1.253	.159	.188	.185	.154
for Hysterectomy	16.208	-	-	.146	-	.183	-
for Laminotomy	18.581	-	-	.134	-	.181	-
for Lens Extraction	12.409	13.328	1.074	.164	.135	.328	.288
Anesthesia (by Unit of Service)							
for Ex. Breast Cyst	1.125	1.140	1.013	.077	.086	.145	.132
for Tonsillectomy (Child)	1.111	-	-	.063	-	.133	-
for Tonsillectomy (Adult)	1.113	-	-	.072	-	.132	-
for Appendectomy	1.117	-	-	.077	-	.120	-
for Cholecystectomy	1.108	1.116	1.007	.071	.094	.134	.131
for Herniorrhaphy	1.135	1.131	.996	.078	.097	.141	.144
for TUR Prostate	1.135	1.111	.979	.079	.088	.143	.131
for D&C	1.139	1.213	1.065	.091	.104	.162	.178
for Hysterectomy	1.128	1.203	1.066	.068	.070	.132	.092
for Laminotomy	1.136	-	-	.066	-	.128	-
for Lens Extraction	.966	1.010	1.046	.116	.095	.259	.226

differences seen in the table are for lens excision, D & C, and hysterectomy anesthesia, where Medicare unit prices are higher by proportions ranging from 4.6 percent to 6.6 percent.

The mean CV values for anesthesiology services under Blue Shield tend to be fairly uniform. Those for services reimbursed under Medicare appear to be only slightly less uniform, and for most procedures, just slightly larger. From other in-house studies at Pennsylvania Blue Shield, it is known that anesthesiologists' prices have been rising rather sharply over recent years. The mean CVs seen here therefore probably are more indicative of price change phenomena than of price discrimination, *per se*.

The CV of medians (unit basis) is relatively uniform and small over all anesthesiology procedures, indicating a high level of agreement between anesthesiologists on the prices of their basic services.

Anesthesiologists' visit prices are mixed, in relation to average visit prices for all doctors. The practice of anesthesiology in recent years has been tending toward a greater amount of direct contact between anesthesiologist physicians and patients, most of this occurring with inpatients in the hospital setting. For these visits in the hospital setting, the average anesthesiologist's price level for a brief hospital visit is very close to the average for all physicians; the Blue Shield intermediate hospital visit is 15.1 percent lower than the all doctor average; and the Medicare intermediate hospital visit is 11.9 percent higher. The intermediate hospital visit is on average priced 29.4 percent higher for Medicare than for Blue Shield, again probably reflecting additional time and precaution taken in connection with anesthesia for more elderly patients. The CV of medians, incidentally, indicates great

variation (poor agreement) between different anesthesiologists in the pricing of intermediate hospital visits.

E. OTHER SPECIALTIES

Comparative pricing characteristics for physicians in other specialties are displayed in Table 8. "Other" specialists have price levels for visits and consultation that are higher than the all physician averages by margins ranging from 8.7 percent to 16.3 percent. Their average Medicare and Blue Shield prices differ, but not by much, and not in any consistent pattern. Mean CVs listed in the table suggest little, if any, price discrimination for these general medical services (visits and consultation), with the exception of Medicare office visits. While Medicare office visits have somewhat higher mean CV than seen for other types of visits and consultations listed here, they are not as high as the "all physician" mean CVs for Medicare office visits. The physicians in this cohort tend to have a rather extraordinarily poor level of agreement on pricing for both office visits and hospital visits (as indicated by high-valued CV of medians). Perhaps this is simply because "other," by definition, constitutes a diverse lot.

The price levels for diagnostic radiology are very close to the all physician averages, probably because this type of service tends to be dominated by radiologists (included among "other"). By contrast, pathology services have lower average prices among this cohort than among all physicians in aggregate. This may be reflecting a situation in which a significant volume of pathology services are performed by physicians in

TABLE 8. COMPARATIVE CHARACTERISTICS OF BLUE SHIELD AND MEDICARE PRICES FOR SELECTED SERVICES PERFORMED BY PHYSICIANS IN OTHER SPECIALTIES

Procedure	Relative Price Units		Medicare/BS Price Ratio	Mean CV		CV of Medians	
	Blue Shield	Medicare		Blue Shield	Medicare	Blue Shield	Medicare
Medical Services and Visits:							
Brief Office Visit	-	1.117	-	-	.146	-	.341
Intermediate Office Visit	-	1.408	-	-	.093	-	.394
Home Visit	-	1.619	-	-	.085	-	.287
Initial Hospital Visit	4.762	4.836	1.016	.044	.076	.320	.234
Brief Hospital Visit	1.052	1.108	1.053	.081	.069	.373	.387
Intermediate Hospital Visit	1.586	1.538	.970	.071	.070	.418	.401
Comprehensive Consultation	5.309	5.157	.971	.066	.063	.246	.245
Surgical Procedures:							
Arthrocentesis	1.947	2.064	1.060	.103	.147	.349	.310
Proctosigmoidoscopy	-	2.517	-	-	.058	-	.247
Diagnostic Radiology:							
Chest X-ray	2.753	2.747	.998	.036	.049	.181	.173
Knee X-ray	2.545	2.529	.994	.082	.116	.233	.237
Upper GI	5.567	5.621	1.010	.036	.063	.180	.186
Barium Enema	4.918	4.926	1.002	.044	.063	.200	.206
Cholestography	3.934	3.893	.990	.038	.056	.171	.179
Diagnostic Medical Services:							
Electrocardiogram (EKG)	2.414	2.348	.973	.051	.054	.178	.210
Electroencephalogram (EEG)	5.727	5.286	.923	.063	.090	.250	.305
Pathology:							
Urinalysis	.385	.371	.964	.051	.087	.241	.318
Cholesterol Blood Test	.606	.620	1.023	.074	.091	.244	.246
Fasting Blood Sugar (FBS)	.546	.521	.954	.047	.091	.350	.246
Complete Blood Count (CBC)	.751	.703	.936	.046	.099	.258	.252

other cohorts (e.g., general practice or medical specialties), but pathologists -- by concentrating on these types of services -- achieve economies of scale in delivering them. Medicare and Blue Shield prices for diagnostic radiology appear to be quite close on average. Diagnostic medical services and pathology, on the other hand, appear to exhibit a slight price break for Medicare for most of these kinds of procedures in the "other" cohort.

Mean CVs for the diagnostic service categories tend to be quite small, especially for Blue Shield. The findings suggest little or no price discrimination for these services among physicians in other specialties in the Blue Shield market, and only slightly greater indication of possible discrimination in the Medicare market.

There is a relatively high level of price agreement for diagnostic radiology services performed by other specialists (presumably mainly radiologists for these types of services). The degree of price agreement between physicians in this cohort appears to be rather ordinary for most diagnostic medical and pathology services.

VI. FINDINGS BETWEEN SPECIALTY GROUPS

In this section, the data are rearranged and examined in such a way as to more directly highlight differences between specialty groups for given selected procedures. Specialty differences are examined for three groups of procedures: (a) visits and consultation; (b) surgical procedures; and (c) ancillary and diagnostic services. Specialty groups are defined as before.

A. VISITS AND CONSULTATION

Table 9 displays physician pricing characteristics by specialty group for selected types of visits and consultation. Included are brief and intermediate office visits; initial, brief, and intermediate hospital visits; and comprehensive consultation. As in the preceding sections, Blue Shield and Medicare price levels are given in terms of Relative Price Units (RPUs), and the ratio of characteristic Medicare prices to Blue Shield prices is given. Mean CV and CV of medians are included, as before, to provide indicators of consistency of pricing behavior at the individual physician and physician cohort levels, respectively. In addition, the numbers of physicians represented in each specialty group cohort for each procedure is given.

The results in Table 9 show quite dramatically the differences in prices for specialists (of all types) and general practice physicians. These differences are even more pronounced for Medicare patients than for Blue Shield. Both types of office visit show generalists giving lower

TABLE 9. PRICING CHARACTERISTICS BY SPECIALTY GROUP FOR SELECTED KINDS OF PHYSICIAN VISITS AND CONSULTATION

Procedure	Relative Price Units		Medicare/BS	Mean CV		CV of Medians		N	
	Blue Shield	Medicare	Price Ratio	Blue Shield	Medicare	Blue Shield	Medicare	Blue Shield	Medicare
Brief Office Visit:									
General/Family Practice	.940	.872	.928	.147	.054	.218	.177	178	3,222
Medical Specialties	1.053	1.090	1.035	.062	.160	.321	.276	54	1,619
Surgical Specialties	1.082	1.102	1.018	.058	.195	.271	.292	37	2,302
Anesthesiology	-	1.015	-	-	.148	-	.267	-	29
Other Specialties	-	1.117	-	-	.146	-	.341	-	246
Intermediate Office Visit:									
General/Family Practice	1.048	1.032	.985	.045	.110	.155	.232	115	2,344
Medical Specialties	1.354	1.356	1.001	.041	.103	.248	.288	79	1,737
Surgical Specialties	1.200	1.407	1.173	.045	.135	.253	.314	37	2,146
Anesthesiology	-	1.175	-	-	.139	-	.270	-	19
Other Specialties	-	1.408	-	-	.093	-	.394	-	216
Comprehensive Consultation:									
General/Family Practice	3.946	3.939	.998	.050	.058	.336	.312	103	127
Medical Specialties	5.223	5.245	1.004	.063	.065	.275	.274	1,032	1,032
Surgical Specialties	4.258	4.219	.991	.085	.094	.289	.291	904	904
Anesthesiology	-	-	-	-	-	-	-	-	-
Other Specialties	5.309	5.157	.971	.066	.063	.246	.245	134	134
Initial Hospital Visit:									
General/Family Practice	3.623	3.519	.971	.044	.053	.359	.262	1,128	1,288
Medical Specialties	4.669	4.777	1.023	.055	.060	.276	.275	1,590	1,422
Surgical Specialties	3.976	3.993	1.004	.066	.079	.281	.277	957	820
Other Specialties	4.762	4.836	1.016	.044	.076	.320	.234	102	115
Brief Hospital Visit:									
General/Family Practice	.853	.860	1.008	.068	.073	.336	.333	940	1,277
Medical Specialties	1.027	1.105	1.076	.071	.069	.365	.316	923	998
Surgical Specialties	.986	.978	.992	.084	.087	.375	.364	1,023	1,127
Anesthesiology	-	.952	-	-	.058	-	.313	-	16
Other Specialties	1.052	1.108	1.053	.081	.069	.373	.387	88	141
Intermediate Hospital Visit:									
General/Family Practice	1.227	1.196	.975	.075	.065	.357	.335	1,180	1,380
Medical Specialties	1.467	1.478	1.007	.081	.064	.328	.303	1,787	1,667
Surgical Specialties	1.384	1.344	.971	.096	.081	.352	.340	1,324	1,295
Anesthesiology	1.173	1.518	1.294	.064	.080	.229	.375	15	20
Other Specialties	1.586	1.538	.970	.071	.070	.418	.401	140	200

prices to Medicare, and specialists giving higher prices to Medicare. Price differences between general practice physicians and specialists range from 12.0 percent to 29.2 percent under Blue Shield, and range upward to differences as great as 36.3 percent (general practice compared to surgical or "other" specialists) under Medicare. For hospital visits, specialist prices commonly exceed generalists prices by 20 to 30 percent, or more.

The mean CV data suggest that general practice physicians may be price discriminating to Blue Shield patients for brief office visits, and to Medicare patients for intermediate office visits. There is little or no indication, however, to suggest generalist price discrimination for Medicare brief office visits or Blue Shield intermediate office visits. All cohorts of specialists show evidence of possible price discrimination for Medicare office visits, along with little or no price discrimination for Blue Shield office visits.

General practice physicians have reasonably good characteristic price agreement among themselves (CV of medians) for both types of office visit. Price level agreement between different specialists for office visits ranges from fair to poor.

All physician cohorts exhibit little, if any, evidence of price discrimination for hospital visits under either Medicare or Blue Shield. All physician cohorts also show almost universally low levels of agreement on prices for hospital visits.

Except for surgical specialties, there is little price discrimination evidenced for consultations; and even for surgical specialists, the mean CV for consultation is not outstandingly large. Specialists have

uniformly reasonable levels of agreement between different physicians for consultation prices; but general practice physicians have relatively high values for CV of medians (low level of inter-physician agreement) for consultation.

B. SURGICAL PROCEDURES

Table 10 shows comparative data between specialty groups, and between Blue Shield and Medicare, on pricing characteristics for selected surgical procedures. Most of the more significant and definitive surgical procedures are performed almost solely by surgical specialists, and hence are not included among the selected procedures in this table, since there are no useful or interesting inter-specialty comparisons to be made for them. Arthrocentesis and proctosigmoidoscopy, although minor in nature and performed predominately in the office setting, are included because they are performed very frequently, both by generalists and a great variety of specialists. Tonsillectomy (child) is included here because it was the only definitive, therapeutic surgical procedure (from among the procedures addressed in this study) for which there was statistically meaningful incidence in any physician cohort other than surgical specialists. Vaginal obstetrical delivery also is included in this group for present purposes.

For arthrocentesis, the difference between the lowest priced cohort (medical specialties) and the highest (surgical specialties) is 10.6 percent under Medicare and 13.7 percent under Blue Shield. General/family practice physicians, surprisingly, are not the lowest priced for this

TABLE 10. PRICING CHARACTERISTICS BY SPECIALTY GROUP FOR SELECTED SURGICAL PROCEDURES

Procedure	Relative Price Units		Medicare/BS	Mean CV		CV of Medians		N	
	Blue Shield	Medicare	Price Ratio	Blue Shield	Medicare	Blue Shield	Medicare	Blue Shield	Medicare
Arthrocentesis:									
General/Family Practice	1.969	1.864	.947	.096	.130	.323	.333	460	258
Medical Specialties	1.903	1.867	.981	.088	.137	.313	.305	169	186
Surgical Specialties	2.163	2.064	.954	.137	.166	.337	.336	378	306
Other Specialties	1.947	2.064	1.060	.103	.147	.349	.310	27	27
Tonsillectomy (Child):									
General/Family Practice	11.294	-	-	.076	-	.124	-	10	-
Surgical Specialties	15.526	-	-	.058	-	.240	-	178	-
Proctosigmoidoscopy:									
General/Family Practice	2.427	2.330	.960	.057	.067	.339	.348	144	62
Medical Specialties	2.711	2.743	1.012	.056	.070	.283	.293	290	25
Surgical Specialties	3.353	3.306	.986	.085	.124	.302	.308	468	44
Vaginal Delivery:									
General/Family Practice	26.023	-	-	.053	-	.210	-	98	-
Surgical Specialties	39.667	-	-	.054	-	.182	-	585	-

procedure. Overall, the price range for this procedure is relatively narrow. The average generalist physician gives Medicare a 5.3 percent price break, while the average physician in "other" specialties charges 6.0 percent more to Medicare than to Blue Shield patients.

The price difference between specialty groups is much more significant for proctosigmoidoscopy. Here, surgical specialties again are highest, with price levels under both Medicare and Blue Shield that are approximately 40 percent higher than those of the lowest priced cohort (generalists). Differences between Medicare and Blue Shield prices for this procedure are very slight.

Relatively high mean CV values for arthrocentesis very strongly suggest the possibility of some price discrimination, at the individual physician level in all cohorts, especially under Medicare. Except for surgical specialists, there is relatively much less indication of individual physician price discrimination for proctosigmoidoscopy. For surgical specialists under Medicare, the indication of possible discrimination is quite high for this procedure. In general, both arthrocentesis and proctosigmoidoscopy show very poor price agreement between different physicians (high CV of medians) in all cohorts.

The average general practice physician's characteristic price for a child's tonsillectomy is 27.3 percent less than the average surgical specialist's price. For vaginal obstetrical delivery, the average generalist's price is 34.4 percent less than the average for surgical specialists. Both generalists and surgical specialists show little, if any, price discrimination for either of these procedures. Physicians in both cohorts show relatively high levels of agreement on prices for both

procedures.

C. MISCELLANEOUS/DIAGNOSTIC PROCEDURES

Pricing characteristics by specialty group for selected miscellaneous and diagnostic procedures are shown in Table 11. This includes the diagnostic radiology procedures, EKG, and pathology (lab test) procedures.

"Other" specialties have the highest prices for nearly all diagnostic radiology -- "other" in this instance almost certainly being represented by radiologists in the "other" cohort. The price differentials are not particularly large, however. As the single exception, both in direction and in magnitude of difference, the results for knee x-ray show surgical specialists' prices (presumably orthopedic surgeons who take their own x-rays) to be approximately 15 percent higher than "other" specialists' prices under both Medicare and Blue Shield. Diagnostic radiology in general shows very little price difference between Medicare and Blue Shield in any of the specialty cohorts. Diagnostic radiology (except for knee x-ray) in general shows little evidence of individual physician price discrimination, while also showing relatively high levels of price agreement between different physicians, in all specialty groups. There appear to be no remarkable differences between specialty groups with regard to consistency of pricing practices, either at the individual physician level or the cohort level, for diagnostic radiology services.

For EKGs, general/family practice physicians have the lowest price levels, and surgical specialists the highest. Average surgical specialist prices for EKG are 12.3 percent higher than average generalist

TABLE 11. PRICING CHARACTERISTICS BY SPECIALTY GROUP FOR SELECTED MISCELLANEOUS/DIAGNOSTIC PROCEDURES

	Relative Price Units		Medicare/BS	Mean CV		CV of Medians		N	
Procedure	Blue Shield	Medicare	Price Ratio	Blue Shield	Medicare	Blue Shield	Medicare	Blue Shield	Medicare
Chest X-Ray:									
General/Family Practice	2.606	2.667	1.023	.053	.058	.191	.187	31	32
Medical Specialties	2.623	2.627	1.002	.041	.051	.156	.151	189	187
Surgical Specialties	2.601	2.534	.974	.043	.074	.191	.187	12	13
Other Specialties	2.753	2.747	.998	.036	.049	.181	.173	191	156
Knee X-Ray:									
Medical Specialties	2.395	-	-	.090	-	.235	-	11	-
Surgical Specialties	2.926	2.904	.992	.125	.118	.262	.267	95	44
Other Specialties	2.545	2.529	.994	.082	.116	.233	.237	133	77
Upper GI:									
General/Family Practice	5.132	5.097	.993	.035	.059	.200	.212	32	23
Other Specialties	5.567	5.621	1.010	.036	.063	.180	.186	155	128
Barium Enema:									
Medical Specialties	4.767	4.564	.957	.021	.034	.200	.178	17	16
Other Specialties	4.918	4.926	1.002	.044	.063	.200	.206	93	91
Cholecystography:									
Medical Specialties	3.769	3.589	.952	.040	.036	.180	.165	31	15
Other Specialties	3.934	3.893	.990	.038	.056	.171	.179	131	86
EKG:									
General/Family Practice	2.315	2.266	.979	.036	.061	.229	.231	1,007	833
Medical Specialties	2.364	2.338	.989	.038	.060	.195	.195	1,363	1,363
Surgical Specialties	2.599	2.606	1.003	.036	.067	.219	.217	67	67
Other Specialties	2.414	2.348	.973	.051	.054	.178	.210	55	55

TABLE 11. (CONTINUED -- Page 2 of 2)

Procedure	Relative Price Units		Medicare/BS	Mean CV		CV of Medians		N	
	Blue Shield	Medicare	Price Ratio	Blue Shield	Medicare	Blue Shield	Medicare	Blue Shield	Medicare
Urinalysis:									
General/Family Practice	.425	.347	.816	.059	.115	.329	.363	237	738
Medical Specialties	.423	.383	.905	.052	.086	.341	.363	361	731
Surgical Specialties	.497	.423	.851	.071	.106	.380	.409	69	196
Other Specialties	.385	.371	.964	.051	.087	.241	.318	37	144
Cholesterol Blood Test:									
General/Family Practice	.677	.655	.968	.058	.064	.276	.267	201	263
Medical Specialties	.655	.638	.974	.053	.050	.336	.334	305	341
Surgical Specialties	.874	.691	.791	.054	.080	.506	.240	16	15
Other Specialties	.606	.620	1.023	.074	.091	.244	.246	28	92
FBS:									
General/Family Practice	.565	.515	.912	.047	.074	.245	.262	478	1,039
Medical Specialties	.553	.529	.957	.050	.062	.238	.242	487	803
Surgical Specialties	.656	.578	.881	.064	.059	.342	.242	26	69
Other Specialties	.546	.521	.954	.047	.091	.350	.246	45	178
CBC:									
General/Family Practice	.756	.710	.939	.057	.082	.241	.250	411	569
Medical Specialties	.737	.708	.961	.056	.069	.285	.290	505	628
Surgical Specialties	.788	.749	.951	.048	.043	.355	.385	43	39
Other Specialties	.751	.703	.936	.046	.099	.258	.252	49	154

prices under Blue Shield, and 15.0 percent higher under Medicare. There is very little difference between average Blue Shield and Medicare prices. EKGs are performed primarily by general practice and medical specialist physicians, and the mean CV under Blue Shield for both of these groups is extremely low. The mean CVs for Medicare, while not particularly large in absolute terms, are more than 50 percent greater than the Blue Shield mean CVs -- possibly indicating more individual physician price discrimination with Medicare patients than with Blue Shield patients for physicians in both of these cohorts, as well as for surgical specialists, too. Physicians in all cohorts show good levels of price agreement for EKG.

For pathology procedures, physicians in surgical specialties consistently have the highest prices. "Other" specialists (presumably represented here primarily by pathologists) consistently tend to have the lowest, or near lowest, prices. The percentage difference between highest and lowest price levels, by specialty cohort, is quite large for most specific procedures. All specialty groups tend to give a good price break to Medicare for pathology services. The relative ranking of different specialty groups with respect to Medicare/Blue Shield price ratio varies, however, from procedure to procedure; and no uniform pattern is apparent on this between specialty groups.

There is no clear, consistent pattern of difference between specialty cohorts with respect to pricing consistency at the individual physician level (mean CV) for pathology services. As the most noticeable exception, general practice and surgical specialist physicians may be showing relatively more price discrimination for urinalyses for Medicare patients.

The patterns of price agreement between different physicians in given

cohorts (CV of medians) vary from procedure to procedure. All specialty groups show poor agreement on price levels for urinalysis, with surgical specialists showing the least agreement. For cholesterol blood test and FBS, the agreement levels within most cohorts are more-or-less average -- with the exceptions that surgical specialists again have an unusually large CV of medians (low agreement) for these two tests under Blue Shield, and medical specialists have a low agreement level for cholesterol blood test under both Blue Shield and Medicare. Surgical specialists once again are shown as having unusually diverse pricing practices between different physicians for CBC.

VII. FINDINGS BETWEEN MARKET AREAS

This section examines inter-area differences in physician prices and pricing characteristics as evidenced in differences observed for selected specific procedures. The area designations used here follow the accepted designations for Standard Metropolitan Statistical Area (SMSAs) in Pennsylvania, with a few deviations from the usual SMSA definitions. The principal difference is that the Pennsylvania portion of the Philadelphia SMSA has been split into two parts: the first consisting of central city Philadelphia (Philadelphia County), and the second consisting of the aggregation of Philadelphia's four suburban counties. Similarly, Beaver County has been segregated from the rest of what usually is treated as the Pittsburgh SMSA. All counties not associated with SMSAs are aggregated as non-SMSA, or rural. The fifteen areas defined in this manner (including the rural residual as a single area) may be viewed as constituting fifteen separate and distinct medical market areas for purposes of this study task.

One thing that becomes rather quickly apparent is that there is a considerable amount of variation in pricing behavior from procedure to procedure -- variation that frequently is a little irregular, and sometimes seemingly anamolous and capricious. This then is compounded by overlaying it on geographic inter-area variations that often appear equally irregular and capricious. Systematic patterns and generalizations are quite hard to discern in a treatment of inter-area comparisons based upon concurrent examination of several different specific individual procedures. The following therefore will be limited essentially to

descriptive detail, with only loosely drawn generalizations. A more orderly and useful analysis requires single-valued composite price indexes, along with more powerful statistical tools and multivariate analytic techniques. This will be addressed in a subsequent project report.

A. VISITS AND CONSULTATION

Inter-area differences for general medical services are examined here through the vehicle of three repesentative specific procedures: brief office visit, intermediate hospital visit, and comprehensive consultation. Comparative price characteristic data for these procedures are displayed in Tables 12, 13 and 14, respectively. The format is the same as used for several previous displays: price levels, expressed in terms of relative price units (RPUs); Medicare and Blue Shield price levels compared by means of the Medicare/Blue Shield price ratio; and mean CV and CV of medians, each for both Medicare and Blue Shield. Data are displayed for each of the fifteen areas, with statewide averages also included as reference points. To facilitate a more ready comparison of the relative price levels between areas, the RPU data also have been converted to multiples of the statewide average price for each topic procedure listed. These cross-sectional price relatives are given in Table 15, for each of the three procedures and each line of business.

From examination of the RPU data in Tables 12 through 14, plus the geographic cross-sectional price relatives in Table 15, it is quickly seen that Philadelphia and its suburban areas have consistently high prices for

TABLE 12. COMPARATIVE CHARACTERISTICS OF BLUE SHIELD AND MEDICARE PRICES FOR BRIEF OFFICE VISIT, BY METROPOLITAN AREA

Area (SMSA)	Relative Price Units		Medicare/BS	Mean CV		CV of Medians	
	Blue Shield	Medicare	Price Ratio	Blue Shield	Medicare	Blue Shield	Medicare
Statewide	.984	1.000	1.016	.055	.165	.239	.292
Pittsburgh	1.048	1.056	1.008	.064	.171	.227	.262
Philadelphia	1.034	1.111	1.074	.039	.146	.275	.307
Suburban Philadelphia	1.014	1.055	1.040	.053	.163	.233	.276
Allentown-Bethlehem-Easton	.916	.963	1.051	.059	.178	.250	.289
Altoona	-	.929	-	-	.180	-	.270
Erie	.945	.987	1.044	.050	.184	.126	.234
Harrisburg	.840	.952	1.133	.030	.185	.180	.291
Johnstown	-	.966	-	-	.168	-	.313
Lancaster	-	.833	-	-	.157	-	.249
Wilkes Barre-Scranton	1.070	1.021	.954	.067	.157	.259	.274
Beaver	.956	.961	1.005	.055	.172	.214	.250
Reading	1.011	.953	.943	.081	.164	.210	.240
Williamsport	-	.926	-	-	.181	-	.250
York	.987	.876	.888	.098	.168	.212	.265
Non-SMSA Areas	.876	.864	.986	.044	.172	.175	.249

TABLE 13. COMPARATIVE CHARACTERISTICS OF BLUE SHIELD AND MEDICARE PRICES FOR INTERMEDIATE HOSPITAL VISIT, BY METROPOLITAN AREA

Area (SMSA)	Relative Price Units		Medicare/BS	Mean CV		CV of Medians	
	Blue Shield	Medicare	Price Ratio	Blue Shield	Medicare	Blue Shield	Medicare
Statewide	1.381	1.357	.983	.084	.069	.354	.341
Pittsburgh	1.282	1.281	.999	.083	.062	.322	.307
Philadelphia	1.640	1.599	.975	.089	.070	.325	.312
Suburban Philadelphia	1.478	1.462	.089	.083	.071	.350	.331
Allentown-Bethlehem-Easton	1.317	1.282	.973	.088	.066	.311	.295
Altoona	1.061	1.143	1.077	.100	.066	.256	.336
Erie	1.258	1.206	.959	.088	.068	.265	.266
Harrisburg	1.318	1.277	.969	.086	.060	.389	.370
Johnstown	1.401	1.440	1.028	.056	.060	.370	.370
Lancaster	1.194	1.131	.947	.092	.084	.287	.250
Wilkes Barre-Scranton	1.324	1.301	.983	.072	.068	.330	.328
Beaver	1.189	1.162	.977	.089	.064	.321	.317
Reading	1.173	1.148	.979	.086	.054	.256	.248
Williamsport	1.126	1.172	1.041	.056	.067	.346	.380
York	1.284	1.234	.961	.071	.080	.250	.244
Non-SMSA Areas	1.208	1.182	.978	.083	.076	.339	.333

TABLE 14. COMPARATIVE CHARACTERISTICS OF BLUE SHIELD AND MEDICARE PRICES FOR COMPREHENSIVE CONSULTATION, BY METROPOLITAN AREA

	Relative Price Units		Medicare/BS	Mean CV		CV of Medians	
Area (SMSA)	Blue Shield	Medicare	Price Ratio	Blue Shield	Medicare	Blue Shield	Medicare
Statewide	4.767	4.737	.994	.071	.077	.300	.302
Pittsburgh	4.206	4.190	.996	.068	.076	.278	.273
Philadelphia	5.561	5.497	.988	.080	.084	.283	.293
Suburban Philadelphia	4.929	4.940	1.002	.068	.080	.282	.277
Allentown-Bethlehem-Easton	5.108	5.110	1.000	.062	.065	.224	.223
Altoona	3.385	3.767	1.113	.059	.061	.116	.308
Erie	4.514	4.575	1.014	.060	.080	.228	.224
Harrisburg	4.370	4.392	1.005	.081	.076	.264	.230
Johnstown	4.686	4.623	.987	.029	.029	.259	.250
Lancaster	3.874	3.683	.951	.059	.070	.185	.194
Wilkes Barre-Scranton	4.851	4.874	1.005	.076	.074	.293	.305
Beaver	4.258	4.307	1.012	.057	.061	.234	.223
Reading	4.168	4.324	1.037	.077	.082	.264	.230
Williamsport	4.126	4.099	.993	.050	.067	.250	.256
York	4.452	4.658	1.046	.076	.092	.234	.237
Non-SMSA Areas	4.120	4.000	.971	.078	.076	.276	.285

TABLE 15. RATIOS OF METROPOLITAN AREA AVERAGE PRICE LEVELS FOR SELECTED VISITS AND CONSULTATION, RELATIVE TO STATEWIDE AVERAGE PRICES

Area (SMSA)	Blue Shield				Medicare			
	Brief Off. Vis.	Intermed. Hosp. Vis.	Comp. Consult.	Mean	Brief Off. Vis.	Intermed. Hosp. Vis.	Comp. Consult.	Mean
Pittsburgh	1.065	.928	.882	.958	1.056	.943	.885	.961
Philadelphia	1.051	1.187	1.167	1.135	1.111	1.178	1.161	1.150
Phila. Suburban	1.030	1.070	1.034	1.045	1.055	1.077	1.043	1.058
Allentown-Bethlehem-Easton	.931	.954	1.071	.985	.963	.944	1.079	.995
Altoona	-	.768	.710	.739	.929	.842	.795	.855
Erie	.960	.910	.947	.939	.987	.889	.966	.947
Harrisburg	.853	.954	.917	.908	.952	.941	.927	.940
Johnstown	-	1.014	.983	.999	.966	1.061	.976	1.001
Lancaster	-	.864	.813	.839	.833	.833	.778	.815
Wilkes Barre-Scranton	1.087	.959	1.018	1.021	1.021	.959	1.029	1.003
Beaver	.972	.861	.893	.909	.961	.856	.909	.909
Reading	1.028	.849	.874	.917	.953	.846	.913	.904
Williamsport	-	.815	.865	.840	.926	.863	.865	.885
York	1.003	.930	.934	.956	.876	.909	.983	.923
Non-SMSA	.889	.875	.864	.876	.864	.871	.844	.860

these general visit and consultation services. Philadelphia and its suburbs in fact emerge as the highest priced areas in the state. There is no consistent pattern on the lowest price areas. However, those areas tending generally to be low priced include the rural areas, Altoona (which is chronically depressed economically), and some small cities in the central and southcentral part of the state (where there tend to be relatively strong rurally oriented value systems). There are no strong consistent inter-area patterns of Medicare/Blue Shield price differences. The non-SMSA areas consistently give a better than average price break to Medicare patients, but do not consistently give the best price break, compared to other areas.

The mean CVs are relatively close across most areas. They are rather unusually small for brief office visits in Harrisburg and Philadelphia under Blue Shield; are comparatively small for Blue Shield intermediate hospital visits in Willamsport; are very small for consultations in Johnstown under both Medicare and Blue Shield; and are large for Medicare brief office visits everywhere, but are especially large in Erie and Williamsport. All of this adds up to no generalizable pattern. The values listed for CV of medians similarly defy any attempt at systematic and consistent inter-area generalizations.

B. SURGICAL PROCEDURES

Since experience in surgical procedures is relatively rich in the Blue Shield component of the data base, while being relatively sparse in the Medicare component, inter-area comparison of price characteristics for

surgical services will be made here with primary emphasis on Blue Shield data. The data for this are presented in Tables 16, 17, 18 and 19. In Table 16, RPU data are displayed for 13 representative surgical procedures, plus vaginal obstetrical delivery (which is included with the surgical procedures as a matter of convenience), for each of the 15 areas. Table 17 displays the same data transformed to cross-sectional price relatives (multiples of the statewide average price) for each procedure and area, plus the mean price relative for each area across all procedures listed for an area. Tables 18 and 19, respectively, display the corresponding mean CV and CV of medians data. For economy of space layout in Tables 16 through 19, the surgical procedures are indicated by numerical codes. The key to the surgical procedure codes for Tables 16-19 is given in Table 20.

Tables 16 and 17 show central Philadelphia to be the most consistently high priced area for surgical procedures, with suburban Philadelphia also consistently relatively high. The surgical procedures referenced here have prices that average about 10.7 percent higher for central Philadelphia physicians than for the average physician statewide. The Erie SMSA also ranks among the state's highest, with the average Erie area physician being 7.6 percent higher than the statewide average for these sample procedures. Johnstown also is higher than average. Pittsburgh, although a major metropolitan area, has average surgical prices that are slightly below the statewide average. The lowest priced areas for surgery are Lancaster, Williamsport, York, and the rural areas. All of the other areas have mixed patterns.

The mean CV data in Table 18 do not present a very clear picture with

TABLE 16. RELATIVE PRICE UNITS FOR SELECTED SURGICAL PROCEDURES UNDER BLUE SHIELD, BY METROPOLITAN AREA

Area (SMSA)	Procedure Number						
	01	02	03	04	05	06	07
Statewide	15.699	2.029	16.564	15.334	31.180	3.000	49.257
Pittsburgh	14.755	1.956	15.082	16.160	30.590	2.916	50.112
Philadelphia	17.262	2.044	18.206	17.006	34.409	3.257	55.937
Philadelphia Suburban	16.055	2.070	16.052	16.192	34.239	2.948	51.167
Allentown-Bethlehem-Easton	18.643	2.014	20.364	15.069	30.897	2.566	48.467
Altoona	--	--	--	--	--	2.649	--
Erie	--	2.148	--	--	--	3.385	--
Harrisburg	15.145	2.024	17.623	16.918	30.662	2.942	49.351
Johnstown	16.101	2.405	--	--	36.235	4.057	51.955
Lancaster	--	--	--	--	--	2.600	--
Wilkes Barre-Scranton	16.627	1.954	14.796	15.679	31.844	3.204	49.033
Beaver	15.573	2.368	17.627	15.292	28.245	2.982	48.123
Reading	--	1.795	--	--	35.415	3.079	--
Williamsport	--	2.057	--	--	--	2.816	--
York	13.841	1.718	--	--	--	2.832	48.103
Non-SMSA	13.449	2.097	15.380	13.534	27.655	2.921	46.187

TABLE 16. RELATIVE PRICE UNITS FOR SELECTED SURGICAL PROCEDURES UNDER BLUE SHIELD, BY METROPOLITAN AREA (CONTINUED)

Area (SMSA)	Procedure Number						
	08	09	10	11	12	13	14
Statewide	31.299	61.671	15.042	56.223	77.459	60.458	37.681
Pittsburgh	30.228	56.102	14.448	55.778	74.940	62.816	36.929
Philadelphia	34.643	66.486	17.796	64.557	89.729	58.911	45.400
Philadelphia Suburban	32.636	65.722	15.286	56.731	83.419	68.468	40.758
Allentown-Bethlehem-Easton	30.707	--	15.646	57.847	78.137	57.519	39.863
Altoona	--	--	--	--	--	--	36.983
Erie	--	--	--	58.911	--	--	40.297
Harrisburg	30.857	--	14.277	54.290	--	--	37.860
Johnstown	34.084	--	11.291	46.228	--	--	30.928
Lancaster	--	--	--	--	--	--	32.773
Wilkes Barre-Scranton	33.488	--	15.376	56.320	--	59.183	37.262
Beaver	28.060	--	13.223	51.424	--	--	32.990
Reading	36.369	57.751	15.034	57.065	--	--	36.970
Williamsport	--	--	--	--	--	--	27.819
York	28.780	--	13.245	56.320	--	--	33.183
Non-SMSA	27.782	59.107	12.915	51.593	--	60.798	29.391

TABLE 17. RATIOS OF AVERAGE PRICES BY METROPOLITAN AREA, RELATIVE TO STATEWIDE AVERAGE PRICES, FOR SELECTED SURGICAL PROCEDURES UNDER BLUE SHIELD

Area (SMSA)	Procedure Number						
	01	02	03	04	05	06	07
Pittsburgh	.940	.964	.911	1.054	.981	.972	1.017
Philadelphia	1.100	1.007	1.099	1.109	1.104	1.086	1.136
Philadelphia Suburban	1.023	1.020	.969	1.056	1.098	.983	1.039
Allentown-Bethlehem-Easton	1.115	.993	1.229	.983	.991	.855	.984
Altoona	--	--	--	--	--	.883	--
Erie	--	1.059	--	--	--	1.128	--
Harrisburg	.965	.828	1.064	1.103	.983	.981	1.002
Johnstown	1.026	1.186	--	--	1.162	1.352	1.055
Lancaster	--	--	--	--	--	.867	--
Wilkes Barre-Scranton	1.059	.963	.893	1.022	1.021	1.068	.995
Beaver	.992	1.167	1.064	.997	.906	.994	.916
Reading	--	.885	--	--	1.136	.988	--
Williamsport	--	1.014	--	--	--	.939	--
York	.882	.847	--	--	--	.952	.916
Non-SMSA	.857	1.034	.929	.883	.887	.934	.938

TABLE 17. RATIOS OF AVERAGE PRICES BY METROPOLITAN AREA, RELATIVE TO STATEWIDE AVERAGE PRICES, FOR SELECTED SURGICAL PROCEDURES UNDER BLUE SHIELD (CONTINUED)

Area (SMSA)	Procedure Number							
	08	09	10	11	12	13	14	MEAN
Pittsburgh	.966	.910	.960	.992	.967	1.039	.980	.975
Philadelphia	1.107	1.078	1.183	1.148	1.158	.974	1.205	1.107
Philadelphia Suburban	1.043	1.066	1.016	1.009	1.077	1.132	1.082	1.044
Allentown-Bethlehem-Easton	.981	--	1.040	1.029	1.009	.951	1.058	1.017
Altoona	--	--	--	--	--	--	.981	.932
Erie	--	--	--	1.048	--	--	1.069	1.076
Harrisburg	.986	--	.949	.966	--	--	1.005	.985
Johnstown	1.089	--	.751	.822	--	--	.821	1.029
Lancaster	--	--	--	--	--	--	.870	.869
Wilkes Barre-Scranton	1.070	--	1.022	1.002	--	.979	.989	1.007
Beaver	.897	--	.879	.915	--	--	.876	.957
Reading	1.162	.936	.999	1.015	--	--	.981	1.013
Williamsport	--	--	--	--	--	--	.738	.897
York	.920	--	.881	1.002	--	--	.881	.910
Non-SMSA	.888	.958	.857	.918	--	1.006	.780	.913

TABLE 18. MEAN CV FOR SELECTED SURGICAL PROCEDURES UNDER BLUE SHIELD, BY METROPOLITAN AREA

Area (SMSA)	Procedure Number													
	01	02	03	04	05	06	07	08	09	10	11	12	13	14
Statewide	.150	.110	.189	.059	.066	.072	.048	.065	.063	.134	.052	.072	.039	.054
Pittsburgh	.133	.113	.199	.040	.071	.074	.043	.064	.049	.133	.065	.053	.043	.056
Philadelphia	.164	.095	.211	.056	.069	.075	.059	.072	.069	.156	.063	.069	.091	.062
Philadelphia Suburban	.177	.109	.231	.074	.081	.065	.051	.083	.071	.154	.040	.089	.046	.050
Allentwn-Bethlehem-Easton	.120	.094	.131	.078	.052	.065	.050	.057	--	.086	.040	.083	.035	.042
Altoona	--	--	--	--	--	.107	--	--	--	--	--	--	--	.041
Erie	--	.148	--	--	--	.070	--	--	--	--	.020	--	--	.065
Harrisburg	.165	.123	.145	.105	.064	.080	.048	.081	--	.113	.063	--	--	.066
Johnstown	.140	.072	--	--	.008	.045	.024	.040	--	.067	.039	--	--	.020
Lancaster	--	--	--	--	--	.046	--	--	--	--	--	--	--	.073
Wilkes Barre-Scranton	.156	.128	.219	.035	.055	.069	.048	.060	--	.125	.056	--	.038	.056
Beaver	.136	.118	.177	.070	.078	.068	.051	.044	.065	.152	.039	--	--	.044
Reading	--	.078	--	--	.061	.079	--	.052	--	.100	.040	--	--	.036
Williamsport	--	.154	--	--	--	.083	--	--	--	--	--	--	--	.021
York	.080	.140	--	--	--	.060	.039	.051	--	.103	.022	--	--	.070
Non-SMSA	.155	.123	.128	.047	.065	.079	.048	.063	.075	.130	.057	--	.029	.053

TABLE 19. CV OF MEDIANS FOR SELECTED SURGICAL PROCEDURES UNDER BLUE SHIELD, BY METROPOLITAN AREA

Area (SMSA)	Procedure Number													
	01	02	03	04	05	06	07	08	09	10	11	12	13	14
Statewide	.262	.333	.259	.243	.190	.329	.152	.185	.140	.255	.171	.192	.145	.224
Pittsburgh	.240	.337	.222	.231	.162	.313	.135	.193	.100	.235	.143	.173	.108	.175
Philadelphia	.285	.323	.220	.186	.218	.334	.148	.190	.148	.234	.184	.199	.134	.157
Philadelphia Suburban	.267	.307	.230	.274	.170	.332	.153	.179	.113	.244	.123	.114	.135	.135
Allentwn-Bethlehem-Easton	.221	.323	.340	.221	.165	.250	.148	.146	--	.166	.164	.154	.176	.211
Altoona	--	--	--	--	--	.198	--	--	--	--	--	--	--	.264
Erie	--	.303	--	--	--	.411	--	--	--	--	.047	--	--	.159
Harrisburg	.131	.281	.244	.281	.138	.340	.093	.127	--	.192	.129	--	--	.147
Johnstown	--	.300	--	--	.194	.222	.125	.139	--	.151	.116	--	--	.150
Lancaster	--	--	--	--	--	.249	--	--	--	--	--	--	--	.132
Wilkes Barre-Scranton	.173	.351	.146	.275	.192	.303	.171	.182	--	.164	.097	--	.168	.207
Beaver	.226	.325	.299	.214	.094	.314	.150	.120	--	.264	.120	--	--	.195
Reading	--	.299	--	--	.176	.264	--	.139	.167	.118	.149	--	--	.139
Williamsport	--	.378	--	--	--	.438	--	--	--	--	--	--	--	.078
York	.305	.401	--	--	--	.290	.074	.133	--	.198	.119	--	--	.195
Non-SMSA	.261	.341	.272	.211	.167	.338	.133	.168	.123	.274	.191	--	.112	.226

TABLE 20. KEY TO PROCEDURE NUMBERS FOR TABLES 16, 17, 18 and 19

Key Code	Procedure Terminology
01	Excision of breast cyst, unilateral
02	Arthrocentesis, major joint
03	Colles fracture, closed manipulative reduction
04	Tonsillectomy, child
05	Appendectomy
06	Proctosigmoidoscopy
07	Cholecystectomy
08	Herniorrhaphy, inguinal, unilateral
09	Transurethral resection (TUR) prostate
10	Dilation and curettage (D&C)
11	Hysterectomy, total, abdominal
12	Laminotomy for herniated intervertebral disc, unilateral, lumbar
13	Excision of lens, unilateral, for cateract, dislocated lens, etc.
14	Obstetrical delivery, vaginal, including antepartum and postpartum care

respect to consistency of pricing and implications for possible price discrimination at the individual physician level. Johnstown has consistently low mean CV values, and Philadelphia (both center city and suburbs) tends to have fairly consistently high mean CV values; but beyond that, the pattern is quite mixed.

The data for CV of medians in Table 19 are similarly mixed. Harrisburg exhibits consistently low values (high agreement between physicians) relative to statewide averages; but after that, there is little or no consistent pattern.

C. ANCILLARY/DIAGNOSTIC PROCEDURES

Miscellaneous diagnostic services are represented here by five specific procedures: chest x-ray, upper GI, EKG, urinalysis, and FBS. Comparative pricing characteristic data for these five procedures are displayed, respectively, in Tables 21 through 25.

Across all of these procedures, the Philadelphia area (including suburban) once again exhibits consistently high relative price levels. York and Allentown-Bethlehem-Easton areas are consistently low. Again, the rural areas are never the highest, but also are not consistently lowest. After this, the relative price levels by procedure and area tend to be quite mixed. Price breaks for Medicare appear to be driven more by differences between procedures (or types of service) than by differences between areas.

Consistency of individual physicians' pricing practices (as indicated by small mean CV) is quite tight for diagnostic radiology services in

TABLE 21. COMPARATIVE CHARACTERISTICS OF BLUE SHIELD AND MEDICARE PRICES FOR CHEST X-RAY, BY METROPOLITAN AREA

Area (SMSA)	Relative Price Units		Medicare/BS	Mean CV		CV of Medians	
	Blue Shield	Medicare	Price Ratio	Blue Shield	Medicare	Blue Shield	Medicare
Statewide	2.679	2.678	1.000	.039	.051	.172	.167
Pittsburgh	2.617	2.630	1.005	.047	.059	.159	.161
Philadelphia	2.883	2.868	.995	.045	.047	.143	.135
Suburban Philadelphia	2.788	2.701	.969	.039	.046	.180	.182
Allentown-Bethlehem-Easton	2.331	2.322	.996	.021	.029	.072	.065
Erie	2.386	2.336	.979	.025	.055	.094	.068
Harrisburg	2.535	2.556	1.008	.068	.088	.173	.065
Johnstown	2.986	-	-	.014	-	.076	-
Wilkes Barre-Scranton	2.513	2.474	.984	.023	.044	.108	.133
Beaver	2.649	2.896	1.093	.053	.058	.288	.244
Reading	2.916	2.928	1.004	.012	.027	.137	.118
Non-SMSA Areas	2.494	2.458	.986	.029	.045	.184	.158

TABLE 22. COMPARATIVE CHARACTERISTICS OF BLUE SHIELD AND MEDICARE PRICES FOR UPPER GI, BY METROPOLITAN AREA

Area (SMSA)	Relative Price Units Blue Shield	Relative Price Units Medicare	Medicare/BS Price Ratio	Mean CV Blue Shield	Mean CV Medicare	CV of Medians Blue Shield	CV of Medians Medicare
Statewide	5.487	5.540	1.010	.036	.061	.184	.190
Pittsburgh	5.151	5.143	.998	.034	.069	.176	.178
Philadelphia	5.915	6.112	1.033	.047	.052	.195	.201
Suburban Philadelphia	5.778	5.914	1.024	.047	.083	.181	.173
Allentown-Bethlehem Easton	4.881	4.913	1.007	.018	.048	.060	.064
Erie	5.236	5.236	1.000	.033	.018	.075	.075
Harrisburg	6.163	6.121	.993	.036	.063	.072	.069
Wilkes Barre-Scranton	4.804	4.828	1.005	.016	.056	.138	.187
Beaver	5.155	5.250	1.018	.015	.034	.091	.082
Non-SMSA Areas	5.038	4.936	.980	.036	.067	.142	.114

TABLE 23. COMPARATIVE CHARACTERISTICS OF BLUE SHIELD AND MEDICARE PRICES FOR EKG, BY METROPOLITAN AREA

	Relative Price Units		Medicare/BS	Mean CV		CV of Medians	
Area (SMSA)	Blue Shield	Medicare	Price Ratio	Blue Shield	Medicare	Blue Shield	Medicare
Statewide	2.353	2.321	.986	.037	.060	.210	.210
Pittsburgh	2.221	2.196	.989	.033	.058	.182	.184
Philadelphia	2.498	2.455	.983	.034	.051	.198	.203
Suburban Philadelphia	2.457	2.434	.991	.038	.061	.202	.205
Allentown-Bethlehem-Easton	2.247	2.165	.964	.035	.071	.179	.174
Altoona	2.345	2.325	.991	.020	.077	.171	.169
Erie	2.275	2.100	.923	.057	.067	.188	.131
Harrisburg	2.236	2.214	.990	.028	.056	.226	.205
Johnstown	2.820	2.780	.986	.032	.078	.255	.259
Lancaster	2.085	2.011	.965	.046	.048	.161	.169
Wilkes Barre-Scranton	2.253	2.192	.973	.047	.071	.208	.195
Beaver	2.262	2.195	.970	.035	.056	.187	.184
Reading	2.281	2.222	.974	.040	.085	.194	.204
Williamsport	2.062	2.031	.985	.025	.024	.136	.147
York	2.010	1.895	.943	.041	.050	.225	.163
Non-SMSA Areas	2.205	2.189	.993	.047	.075	.217	.216

TABLE 24. COMPARATIVE CHARACTERISTICS OF BLUE SHIELD AND MEDICARE PRICES FOR URINALYSIS, BY METROPOLITAN AREA

Area (SMSA)	Relative Price Units		Medicare/BS	Mean CV		CV of Medians	
	Blue Shield	Medicare	Price Ratio	Blue Shield	Medicare	Blue Shield	Medicare
Statewide	.428	.372	.869	.056	.100	.342	.363
Pittsburgh	.417	.359	.861	.051	.100	.302	.339
Philadelphia	.457	.404	.884	.061	.090	.371	.374
Suburban Philadelphia	.432	.393	.910	.053	.101	.324	.356
Allentown-Bethlehem-Easton	.442	.378	.855	.043	.104	.254	.324
Altoona	-	.344	-	-	.097	-	.253
Erie	.425	.377	.887	.087	.122	.313	.347
Harrisburg	.416	.330	.793	.051	.133	.339	.313
Johnstown	.381	.340	.892	.018	.092	.156	.313
Lancaster	-	.290	-	-	.113	-	.352
Wilkes Barre-Scranton	.444	.338	.761	.076	.115	.258	.302
Beaver	.401	.329	.820	.038	.105	.220	.314
Reading	.443	.344	.777	.035	.082	.214	.310
Williamsport	-	.372	-	-	.087	-	.320
York	.267	.293	1.097	.060	.119	.223	.316
Non-SMSA Areas	.351	.317	.903	.065	.104	.369	.332

TABLE 25. COMPARATIVE CHARACTERISTICS OF BLUE SHIELD AND MEDICARE PRICES FOR FBS, BY METROPOLITAN AREA

	Relative Price Units		Medicare/BS	Mean CV		CV of Medians	
Area (SMSA)	Blue Shield	Medicare	Price Ratio	Blue Shield	Medicare	Blue Shield	Medicare
Statewide	.561	.523	.932	.049	.070	.253	.254
Pittsburgh	.533	.521	.977	.045	.064	.230	.251
Philadelphia	.595	.566	.951	.049	.064	.266	.265
Suburban Philadelphia	.582	.540	.928	.052	.070	.246	.246
Allentown-Bethlehem-Easton	.449	.446	.993	.052	.081	.179	.213
Altoona	-	.458	-	-	.082	-	.205
Erie	.525	.497	.947	.067	.062	.188	.173
Harrisburg	.565	.525	.929	.038	.073	.193	.227
Johnstown	.573	.465	.812	.018	.068	.220	.241
Lancaster	.528	.415	.786	.093	.072	.375	.235
Wilkes Barre-Scranton	.532	.518	.974	.041	.076	.207	.184
Beaver	.513	.487	.949	.046	.050	.203	.198
Reading	.426	.411	.965	.054	.088	.215	.195
Williamsport	-	.502	-	-	.068	-	.158
York	.462	.478	1.035	.036	.087	.189	.199
Non-SMSA Areas	.501	.483	.964	.036	.083	.185	.209

Erie, Reading, Wilkes Barre-Scranton (Blue Shield only), and the Allentown-Bethlehem-Easton area. The mean CV for diagnostic radiology is a bit larger than average in the Harrisburg area, compared to other SMSAs; but, on the whole, they do not appear to be particularly high anywhere in the state. EKGs have small mean CVs in Williamsport, and under Blue Shield in Altoona. Mean CVs for the selected pathology services are clearly smaller than average in Johnstown. Urinalysis (but not FBS) has a relatively large mean CV (suggesting possible price discrimination) for Medicare patients everywhere in the state, with Harrisburg and Erie standing out as having the largest. It is difficult to discern clear patterns of differences or similarities between areas for this group of services.

Physicians performing diagnostic radiology services have an unusually high level of price agreement with one another in the Allentown-Bethlehem-Easton area, Erie, and Harrisburg (CV of medians). There is little diversity between different physicians anywhere in the state on prices of radiology services, but the agreement is particularly close at these three places. The CV of medians for EKG is relatively small almost everywhere in the state, and there is nothing particularly striking to be seen in inter-area comparisons for this procedure. Erie, York and Williamsport have relatively low CV of medians (higher than average price agreement between different physicians in these areas) for FBS; but the CV of medians for urinalysis is relatively high (low agreement between physicians) at these same places, as well as throughout the state. For the referenced pathology services, differences between the two pathology procedures (anywhere) are much greater than any inter-area differences.

Once again, there are faint hints of inter-area patterns, but none clearly emerging.

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